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ANNUAL REPORT OF THE  
COMMISSIONERS OF THE  
DISTRICT OF COLUMBIA  
YEAR ENDED JUNE 30, 1913

Vol. II  
ENGINEER DEPARTMENT  
REPORTS



WASHINGTON  
1913



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EXTRACT FROM THE REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA  
FOR THE FISCAL YEAR ENDED JUNE 30, 1913.

OFFICE OF THE COMMISSIONERS OF  
THE DISTRICT OF COLUMBIA,  
Washington, December 1, 1913.

*To the Senate and the House of Representatives of the  
United States of America in Congress assembled:*

The Commissioners of the District of Columbia herewith submit for the information of Congress, pursuant to the requirements of section 12 of an act providing a permanent form of government for the District of Columbia, approved June 11, 1878 (20 Stat. L., 108), a report of the official doings of that government for the fiscal year ended June 30, 1913.

\* \* \* \* \*

ROADWAY PAVEMENTS.

The sum of \$461,000 was appropriated for expenditure during the year in paving new roadways and in repairing and repaving old roadway pavements; and the sum of \$252,000 was appropriated for the construction and repair of suburban roads; \$15,000 was appropriated for grading streets and avenues. In paving work sheet asphalt, asphalt block, and asphalt macadam were used.

The prices paid for new sheet-asphalt pavement, asphalt block, and asphaltic macadam pavement were as follows:

	Per square yard.
Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	\$1.77
Laying vitrified-block gutters, with 6-inch concrete base.....	1.37
Laying asphaltic macadam pavement on 6-inch concrete base.....	1.67
Laying asphaltic macadam pavement on broken-stone base.....	.99
Laying 2-inch asphalt-block pavement, with 6-inch concrete base.....	1.76

The prices for the fiscal year 1914 are as follows:

	Per square yard.
Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	\$1.69
Laying vitrified-block gutters, with 6-inch concrete base.....	1.37
Laying bituminous concrete pavement on 6-inch concrete base.....	1.64
Laying bituminous concrete pavement on broken-stone base.....	.97
Laying 2-inch asphalt-block pavement, with 6-inch concrete base.....	1.79

The current prices for resurfacing and repairing asphalt pavements under contract during the year were as follows:

Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	per square yard..	\$1.68
Laying sheet-asphalt surface (2½ inches before compression), per square yard.....		.64
Laying sheet-asphalt surface (resurfacing by heater method), per cubic foot.....		.66

Laying sheet-asphalt binder (in connection with resurfacing work), per cubic foot .....	\$0.38
Laying sheet-asphalt surface (for repairs and miscellaneous work, cuts, etc.) .....	per cubic foot... .57
Laying asphalt binder (for repairs and miscellaneous work, cuts, etc), per cubic foot .....	.43
Laying sheet-asphalt surface for repairs, etc., within the space required by law to be kept in repair by street railway companies .....	per cubic foot... .63
Laying asphalt binder for repairs, etc., within the space required by law to be kept in repair by street railway companies .....	per cubic foot... .48

The repair of sheet asphalt pavements by the use of the heater method was discontinued. The area already resurfaced under this method is 170,000 square yards, and until the relative superiority of this method of resurfacing over the other method of cutting out the old material and replacing it with new material is determined it is not intended to continue resurfacing by the heater method.

*Table showing square yards and mileage of roadway pavements to June 30, 1913.*

	Square yards. <sup>1</sup>	Miles.
Sheet asphalt and coal tar .....	3,366,041	148.27
Asphalt block .....	654,514	33.37
Bituminous concrete .....	41,671	2.13
Cement concrete .....	16,047	.80
Granite and rubble .....	664,347	25.96
Vitrified block .....	25,402	1.40
Cobble .....	71,979	3.75
Macadam .....	1,448,198	94.80
Gravel and unimproved .....	2,058,327	160.00
Wood block, scoria, and other material adjacent to street-railway tracks .....	42,558	.....
Total .....	8,389,105	470.48

<sup>1</sup> Includes gutters and pavements adjacent to street-railway tracks.

#### MUNICIPAL ASPHALT PLANT.

The District has in operation a portable asphalt plant which cost \$5,000, and the plant, including street-repair equipment, which is used in minor repair work, represents a total capital investment of \$6,900. The plant has been operated in making minor repairs to asphalt pavements for a period of about eight months ending July 1, 1913, and the total output has been 103,145 cubic feet, which is at the rate of about 150,000 cubic feet per annum. The labor cost for operating the plant, including the haul of the product and overhead charges, is 26 cents per cubic foot. This does not include the cost of material. The cost of the top mixture turned out at the plant is \$0.227, which, added to the manufacturing costs, gives a total cost of \$0.487 laid on the street against the contract price for this work of \$0.57. The cost of binder mixture is \$0.141, which, added to the manufacturing cost, gives a total cost laid on the street of \$0.401 as against the contract price of \$0.43 per cubic foot. The element of rental value of site of plant, taxes, and contractor's profits are not charged in these costs. The operation of this plant has demonstrated its economy as a small plant, but it is essentially less economical than a larger permanent plant, which has been recommended by the commissioners. All work of repairing asphalt pavements, except where the roadway is entirely resurfaced, is done directly by the District

instead of by contract. Resurfacing is done by contract. The plant is also authorized to be used in the repair of macadam streets by placing an asphaltic-macadam wearing surface upon them and in constructing asphaltic-macadam wearing surface on concrete base when this work can be economically performed by the use of the plant.

#### SUBURBAN STREETS AND ROADS.

For the construction of suburban streets and roads \$129,525 was spent during the year, and for repairs to suburban roads \$140,000, exclusive of an item of \$67,000, which was spent in grading to provide a new entrance to the Zoological Park at Quarry Road.

Approximately \$26,000 was expended for dust prevention by oiling on the more heavily traveled suburban roads and streets.

The use of bituminous macadam, built by the penetration method, was almost entirely discontinued. In new construction roadways with a bituminous surface were used in sections where permanent conditions had been reached. Asphaltic macadam will be used extensively during the present year, as this class of pavement has been very satisfactory.

#### SIDEWALKS AND ALLEYS.

The sum of \$225,000 was expended in paving sidewalks and alleys abutting private property, one-half the cost of which is covered by assessment; and the sum of \$7,000 was expended in placing sidewalks and curbs around Government reservations for which no assessment was levied. Sidewalks are constructed of cement and the work is done under contract. Alleys are paved with asphalt block or vitrified block, and the work is done by day labor; 41,636 square yards of alley pavement were laid, of which 23,422 square yards were of vitrified block and 18,214 square yards were asphalt block, both being paved on a gravel base.

The prices paid under contract for laying cement sidewalks during the fiscal year 1913 were as follows:

For large jobs adjoining paved streets, per square yard.....	\$0.96
For large jobs adjoining unpaved streets and for all small jobs, per square yard .....	1.20

For the fiscal year 1914 the prices are as follows:

For large jobs adjoining paved streets, per square yard.....	\$0.92½
For large jobs adjoining unpaved streets and for all small jobs, per square yard .....	1.16½

One-half of the cost of laying sidewalks is assessed against the abutting property, and ordinarily the commissioners await a petition from the owners of more than one-half of the frontage along a block before ordering the work. An exception is, however, made where a walk becomes dangerous; in such cases the commissioners order the work done without awaiting for a petition. The law requires the commissioners to advertise for two weeks their intention to lay sidewalks and curb and to pave alleys, and, after a hearing, to order the work done when, in their opinion, it is necessary for the public safety, health, comfort, and convenience. The demand for laying sidewalks and paving alleys is quite constant.

## BRIDGES. -37

No large bridges were constructed during the year. Authority was granted for the construction of a bridge across Rock Creek on the line of Q Street NW., but owing to the delay in securing title to the land for the approaches to this bridge it has not yet been constructed. Bids for the bridge have been received. The estimated cost of this bridge is \$275,000, and an appropriation of this amount has been made by Congress.

An appropriation of \$160,000 has been authorized for the construction of a bridge crossing Rock Creek on the line of Pennsylvania Avenue NW. Plans are now being designed for this bridge.

At the request of the Secretary of War, an item for constructing a draw span in the Pennsylvania Avenue Bridge across the Anacostia River has been included in the estimates of the commissioners for the ensuing fiscal year. The estimated cost of this draw span is \$60,000, and the construction is made necessary by the reclamation of the Anacostia Flats.

## ELIMINATION OF SUBURBAN GRADE CROSSINGS.

The construction of a subway at the Cedar Street crossing of the tracks of the Baltimore & Ohio Railroad Co., in order to eliminate a railroad grade crossing, was completed during the year.

Another such railroad crossing at Benning, D. C., should also be eliminated in the interest of public safety. Designs for this work have been prepared and the estimated cost is \$110,000. The design provides for the construction of a viaduct and bridge to carry Benning Road over the railroad tracks.

Railroad grade crossings have been entirely eliminated within the city limits, and the commissioners believe that they should be similarly eliminated where they exist outside of the city on much traveled roads.

## PUBLIC UTILITIES.

The District appropriation act for the fiscal year 1914, approved March 4, 1913, created a public utilities commission of the District of Columbia, and prescribed its jurisdiction, powers, and duties. This commission is composed of the Commissioners of the District of Columbia, ex officio. The law above referred to imposed the duty on them as a governmental and administrative agency to be exercised and performed as additional and superadded powers to their duties as Commissioners of the District of Columbia.

The Public Utilities Commission is required by the law to publish annual reports showing its proceedings relating to all the public utilities in the District of Columbia, and reports of these matters which have heretofore been contained in the report of the Commissioners of the District of Columbia will hereafter be made by the commission.

## SURVEYOR'S OFFICE.

The work of the surveyor shows a decrease in work done for private parties, but an increase in work done for the District of Columbia and the United States. The work done for private parties is paid for

by fees, and the receipts for fees during the year were \$16,608.32, as compared with \$19,504.55 for the preceding year—a decrease of \$2,896.23. The decrease in private work is due to the falling off of building operations which is referred to in that portion of the report regarding private building construction.

As indicated by surveys and subdivisions made by the surveyor during the year, it would seem that the suburban development of the District has not been as great as in the preceding year. The total number of new blocks created by subdivision in the agricultural portion of the District was 34.

Among the large surveys made for the District and the United States were the survey of about 1,500 acres of land for the proposed reformatory site near Occoquan, Va., and a survey of the property proposed to be taken for a park connection along Rock Creek, between the Zoological Park and Potomac Park.

An appropriation of \$25,000 was made for the acquisition of small parks at the intersection of streets outside the limits of the original city of Washington. Eight triangles have been selected for condemnation under this appropriation, the plats being prepared by the surveyor, and condemnation proceedings are to be instituted for their acquisition.

The surveyor invites attention to the necessity of a further appropriation to acquire other desirable triangles before improvements are made on them which would render their acquisition more expensive.

The surveyor is engaged in making surveys of old subdivisions to establish their lines, under an appropriation of \$2,500 made for the purpose during the year. Many old property lines which were not properly marked when the subdivisions were laid out have been surveyed and substantial monuments planted. He asks that the appropriation for this work be continued for another year.

#### STREET AND ALLEY EXTENSIONS.

But few alley condemnation cases were handled during the year on account of a judicial decision holding that the method of advertising which had been followed for several years did not comply with the requirements of law. Legislation providing for a correction of the law in this particular has been enacted recently by Congress. There are many alley condemnation cases pending which it is intended to take up under the law as changed.

In the District appropriation act for the fiscal year 1914, approved March 4, 1913, the commissioners were authorized to open, extend, or widen any street, avenue, road, or highway to conform to the plan of the permanent system of highways in that portion of the District of Columbia outside of the city of Washington. Previous to the granting of this authority it was necessary to have special legislation from Congress. Under this authority the total cost of acquiring the land for the streets, including the expenses of the condemnation proceedings, is required to be paid entirely from District revenues, and the total cost is required to be assessed as benefits. No proceedings have as yet been started under this authority, but several are contemplated. Any proposed streets not in accordance with the highway plans would have to receive special authorization from Congress.

The District Code also gives the commissioners general authority to open, widen, and extend minor streets and alleys under the same provisions as to charging the cost against District revenues, and making assessments therefor, as is provided for streets condemned under the highway plan.

#### TREES AND PARKINGS.

The number of trees planted on streets, in school yards, and on playgrounds during the year was 4,571, and the number of trees removed 2,799, making a net increase during the fiscal year 1913 of 1,772.

The total number of trees planted along streets, in school yards, and on playgrounds at the close of the fiscal year was 102,599. There are 289.52 miles of streets on which trees have been planted, an increase of 5.82 miles over the preceding year. The trees are planted on both sides of the street and the mileage is based on 352 trees per mile. The total number planted on streets is 101,915. The amount expended in the planting and care of trees was \$43,588.87. The varieties of trees planted were elms, gingkoks, lindens, Norway, sugar, and silver maples, pin and red oaks, and sycamores.

The seed beds of the District nurseries are well stocked with varieties used for street planting.

The work of spraying the trees for the extermination of leaf-destroying insects has given satisfactory results, and the trees are generally in good condition.

A severe storm on August 9, 1913, caused great damage to the trees, and the cost of removing trees and the branches blown down was over \$3,000.

#### STREET AND ALLEY CLEANING.

The street and alley cleaning division serves a population of about 331,000, and covers an area of approximately 70 square miles. It has charge of the cleaning of all streets, avenues, and alleys in the District of Columbia, except such work on the outlying county roads and suburban streets as is done under the supervision of the superintendent of county roads. This work is done under the immediate direction of the superintendent of street and alley cleaning, and not by contract. He also has supervision over the collection and disposal of garbage, ashes, miscellaneous refuse, dead animals, and night soil, which work is done under contract.

The work of street cleaning involves flushing, squeegeeing, machine and hand cleaning, and dust prevention.

The area of streets cleaned by machines increased from 2,167,000 square yards in 1912 to 2,225,000 square yards in 1913. The area of paved alleys cleaned increased from 1,033,000 square yards to 1,060,000 square yards. The area cleaned of suburban streets, paved with macadam and gravel, and unpaved, increased from 1,416,480 to 1,481,525 square yards. The daily cleaning by hand of all streets in the central portions of the city amounts to 2,813,000 square yards, which is an increase of 67,000 square yards over the preceding year. The flushing of the rougher paved streets, consisting of cobblestone, granite, and some asphalt-block streets having an area amounting to

310,000 square yards, an increase of 10,000 over the preceding year. The smoothly paved streets in the hand-cleaned area, which in addition to being swept by hand are further cleaned by the use of squeegees, amount to 1,741,000 square yards. The dust prevention includes the coating of all unpaved suburban streets with emulsion road oil. This treatment is used in lieu of the old treatment of sprinkling with water.

The appropriation for street cleaning was \$265,000, including the cost of snow removal. The appropriation for the previous year was \$260,000, but a separate appropriation of \$10,000 was made for snow removal.

The cost of the work done during the year per 1,000 square yards is as follows: Machine cleaning, 16.1 cents; hand cleaning, 15.4 cents; squeegeeing, 11.7 cents; flushing, 24.8 cents; alley cleaning, 32.5 cents.

#### REMOVAL OF CITY REFUSE.

Fifty thousand seven hundred and seventy-eight tons of garbage, 200,430 cubic yards of ashes, 138,382 cubic yards of miscellaneous refuse, 19,895 barrels of night soil, and 21,287 dead animals were removed under contract during the year.

The contract prices for this service are as follows:

	Per annum.
Garbage.....	\$68,400
Ashes.....	73,150
Miscellaneous refuse.....	17,000
Night soil.....	16,600
Dead animals.....	2,855

The unit costs are as follows:

Garbage.....	per ton..	\$1.34
Ashes.....	per cubic yard..	.36
Miscellaneous refuse.....	do.....	.12
Night soil.....	per barrel..	83
Dead animals.....	per animal..	.134

This unit cost is based upon the contract cost and the service performed.

The contracts for garbage, ashes, and miscellaneous refuse were entered into July 1, 1910, for a period of five years. The contract for night soil was for a period of three years from July, 1, 1910, and it expired July 1, 1913. A new contract for doing this work was entered into for a period of five years at \$15,000 per annum.

#### MUNICIPAL COLLECTION OF CITY WASTE.

With a view of obtaining less objectionable, more efficient, and more economical service for the collection of city waste, the commissioners believe that an appropriation should be made for the purpose of investigating and reporting upon the advisability of the collection and disposal of this waste by them without the intervention of contracts.

#### BUILDING OPERATIONS.

The estimated value of building work, including repairs to buildings, during the year, but not including buildings of the United States Government, was \$10,243,738. This shows a decrease under



the preceding year of \$6,528,435. The value of buildings erected by the Federal Government, as reported to the inspector of buildings, was \$230,267.46.

The number of permits issued for buildings, building repairs, awnings, signs, engines, motors, elevators, etc., was 6,294, an increase of 24 over the preceding year; the number of permits granted for projections beyond the building line was 2,447, a decrease of 839 from those issued during the preceding year.

The number of dwelling houses constructed was 1,540, a decrease of 634 under the preceding year; the number of apartment houses erected was 14, a decrease of 15 under the preceding year; the number of business buildings erected was 296, an increase of 71 over the preceding year; the number of buildings repaired was 4,246, an increase of 946 over the preceding year. The total number of new buildings erected during the year was 1,850, a decrease of 685 under the preceding year.

The distribution of the cost of these improvements, including the repairs to existing buildings, is as follows:

Section.	Buildings.	Repairs. <sup>1</sup>
Northeast.....	\$456,288	\$81,077
Southeast.....	481,083	61,224
Northwest.....	2,686,942	1,278,547
Southwest.....	114,562	34,701
County.....	4,518,037	502,292
Total.....	8,256,912	1,957,841

<sup>1</sup> Does not include awnings, fire escapes, or signs, cost of which is estimated.

It is estimated that there are 59,790 brick buildings and 25,841 frame buildings in the District of Columbia, of which number 1,568 brick buildings and 282 frame buildings were constructed during the year.

It will be noted that while 24 more permits were issued during the year than were issued during the preceding year, the value of building operations was reduced. There was a very material decrease in all new buildings, except business buildings, but the repairs to existing buildings were much greater.

By authority of law the commissioners fix a schedule of fees for permits issued by the inspector of buildings with the object of making this office self-supporting. The fees for permits so collected amounted to \$26,417.71, a decrease from the receipts for permits during the preceding year of \$6,802.24. The expenses of the building office were \$34,654.85, so that the receipts did not meet the expenditures for services by \$8,237.14.

Up to the beginning of the year the building office had collected in fees \$4,200 in excess of its expenditures, but with the substantial falling off in permit revenues during the year, the total expenses of the office since the enactment in 1909 of the provision of law requiring the fees to cover the cost of issuing permits and inspection were \$4,000 in excess of the receipts. The commissioners do not believe, however, that there is any necessity for increasing the permit fees for this reason, as in other parts of the country, as well as here,

building operations are must less than normal, and it is not fair to assume that this loss will continue. The present schedule of fees is believed to be fully as high as is justified under the law. On the other hand, it would be impracticable to reduce the expenses of the office work and inspection, as, notwithstanding the fact that the value of building operations was reduced, the number of permits issued was greater, indicating that while there were not so many large buildings under construction, the territory in which the building took place was scattered, which involved the issuance of more permits and a greater time spent in inspection.

A new edition of the building code was issued during the year, this being the first edition issued since 1909.

#### FIRE ESCAPES.

The buildings coming within the purview of the fire-escape law are now generally equipped with fire escapes and such other fire-prevention apparatus as is required by law. In some minor respects, such as the furnishing of necessary guide signs, fire-alarm gongs and extinguishers, there has not been a compliance of the law in certain instances, but the commissioners are making a special effort, through the legal authority vested in them by the law, to secure full compliance with its provisions. One hundred and ninety-nine fire escapes were erected during the year.

#### ELEVATORS.

The elevators in the District of Columbia are inspected by two inspectors under the direction of the inspector of buildings. The number of passenger elevators installed during the year was 37 and the number of freight elevators 54, a total of 91.

Under a requirement of the building regulations elevator operators are required to pass an examination and be licensed. The number of elevator operators so examined during the year was 482, of which 28 failed. A fee of 50 cents is charged each applicant examined, and the revenue from this source was \$241.

#### INSPECTION OF PRIVATE BUILDINGS.

All private building construction in the District of Columbia is inspected under the direction of the inspector of buildings. The total number of such inspections during the year was 74,093, an increase of 981 over the preceding year. This is an average of 27.4 inspections daily for each field inspector.

#### INSPECTION OF STEAM BOILERS.

The number of steam boilers inspected by the inspector of steam boilers was 567. The compensation of this official is received from fees paid by the owners of boilers. The total amount reported by the inspector as received as such fees during the year was \$2,390, and the expenses of inspection \$483.24, leaving a net compensation to the inspector of \$1,911.76.

## CONSTRUCTION OF MUNICIPAL BUILDINGS.

During the year eight buildings were under construction, under the direction of the municipal architect, as follows:

Building.	Location.	Total cost.
Pound and stable building, health department..	South Capitol Street, between H and I Streets SW.	\$9,589
Manual Training School No. 172.....	On O Street, between North Capitol and First Streets NW.	40,875
Stable, street cleaning department.....	Alley, between Ninth and Tenth Streets, N and O Streets NW.	42,812
James Ormond Wilson Normal School, No. 162..	Eleventh and Harvard Streets NW.....	246,414
Wagon sheds, street-cleaning department stable.	In Square 1043, G Street, between Thirteenth and Fourteenth Streets SE.	4,598
Pump house and lodge for water department....	Eighteenth Street and Minnesota Avenue SE.	11,189
Extension colored men's ward and dining room, Home for the Aged and Infirm.	Blue Plains, D. C.....	20,787
Normal School No. 169 (colored).....	Georgia Avenue, between Howard Place and Fairmont Street NW.	188,894

The only municipal buildings remaining to be constructed, for which appropriations have been made, are the Central High School and the colored high school. Plans for the Central High have been prepared and bids are being solicited. Plans for the colored high are in course of preparation.

## REPAIRS TO MUNICIPAL BUILDINGS.

All municipal buildings are kept in repair by the superintendent of repairs, under the direction of the municipal architect. The appropriation made for repairs and improvements to school buildings and grounds was \$85,000. This was not sufficient to make all repairs and improvements necessary to properly preserve the school buildings, but the money was spent where most needed to keep the buildings from deteriorating to any great extent and in making needed improvements. A large proportion of the appropriation was spent on heating apparatus.

The appropriation for the fiscal year 1914 is \$100,000.

The appropriation of \$25,000 made for fire protection in school buildings has been expended in improving the condition of exits and basements, and practically all of the work of this character has been completed except the basements of some buildings which should be provided with metal ceilings.

It is estimated that the value of school buildings, ground, and equipment is \$11,000,000, and appropriations made for repairs and improvements have been less than 1 per cent of this amount.

For repairs and improvements to police stations and grounds \$5,500 was appropriated and expended, and for repairs and improvements to engine houses and grounds \$12,000 was appropriated and expended.

In the police court building \$750 was appropriated and expended, and for the alteration of the repair shop and yard \$3,500 was appropriated and expended.

## CONDEMNATION OF INSANITARY BUILDINGS.

The board for the condemnation of insanitary buildings examined 526 buildings, of which 311 were located on streets and 215 on alleys. Of these, 134 on streets and 181 on alleys were demolished. In the latter were included the houses in Willow Tree Alley, which was converted into an interior park. Of the buildings examined, 91 fronting on streets and 23 fronting on alleys were repaired.

The total number of buildings examined by the board since its creation by Congress on May 1, 1906, to the end of the fiscal year has been 3,155, of which 1,838 were demolished and 1,115 repaired; 202 of the cases are now pending. Of the buildings demolished, 1,215 were on streets and 623 in alleys. Of the buildings repaired, 739 were on streets and 376 in alleys. Of the cases pending, 161 are on streets and 41 in alleys.

The estimated number of tenants required to secure other quarters in streets and alleys through action of the board during the year was 968, and the total number since the creation of the board 5,293.

The estimated number of tenants on streets and alleys benefited by repairs through the action of the board during the year was 413, and the total number since the creation of the board 4,124.

Special attention is being given by the board to structures unprovided with sewer and water connections, with a view to eliminating box privies and requiring the owners to provide such connections or to remove the structures if conditions do not warrant the expense.

With a few exceptions, the houses in alleys at the present time are reported by the board as not coming within the provisions of law requiring condemnation. The board has had the cooperation of owners and agents in its work, and the repairing or demolishing of buildings as ordered by it has been accomplished without the necessity of using any of the appropriation available for this purpose.

## PLUMBING AND PLUMBING INSPECTION.

During the year the plumbing office made 41,644 inspections, which showed a decrease under the preceding year, due to the general decrease in building work. The average number of inspections made by each inspector per day was about 18.

A new edition of the plumbing regulations was issued during the year. Forty-nine cases of violations of the plumbing regulations were prosecuted in the police court.

Under the compulsory drainage act 85 cases were handled by the plumbing office and the sum of \$891.07 was expended, which sum was assessed against the property as provided by law.

## PLUMBING BOARD.

During the year the plumbing board held 24 sessions for examinations of candidates for license as master plumbers and gas fitters. Fifty-four applicants were examined, of which 38 were new applicants and 16 were applicants for reexamination. Of the former 6 passed the examination and 32 failed, and of the latter 3 passed and 13 failed.

## PUBLIC CONVENIENCE STATIONS.

Three public convenience stations are in operation. They are located at Seventh Street and Pennsylvania Avenue NW., Thirteenth Street and Pennsylvania Avenue NW., and Ninth and K Streets NW. The appropriation for the maintenance of these stations was reduced in the appropriation act for the year from \$11,200 to \$7,500, and by reason of this reduction the stations could only be operated on a 12-hour basis. This was found unsatisfactory to the public.

During the year the patrons of these stations numbered 1,842,415, and the receipts from pay compartments aggregated \$2,735.38, a decrease from the preceding year of \$305.02. This decrease was due to the fact that the stations were not kept open as long hours as during the preceding year.

The commissioners believe public convenience stations should be established at Fifteenth and H Streets N. E. and in the vicinity of Wisconsin Avenue and M Street NW., and have included items for the purchase of sites and the construction of stations in these localities.

## STREET LIGHTING.

There are 16,673 street lamps of all kinds in the District of Columbia, as follows:

Mantle, gas.....	10,078
Electric, arc.....	1,058
Electric, incandescent.....	5,033
Street-designation lamps:	
Gas.....	434
Electric.....	65
	499
Total.....	16,673

This was an increase during the year of 820 lamps of all kinds.

Improved incandescent electric lighting was extended on approximately 7 miles of streets in place of gas and electric arc lamps. Five hundred and eighty-two 100-candlepower incandescent electric lamps were installed.

The appropriation act for the fiscal year 1912 required that all inclosed arc lamps in service on July 1, 1911, be replaced with magnetite arc lamps or some other form of improved lighting to be selected by the commissioners, at the rate of not less than 400 lamps per annum, to be completed by April 1, 1914. In compliance with this act there has been so replaced during the two years ending April 1, 1913, 823 such lamps.

## FIRE-ALARM, TELEGRAPH, AND TELEPHONE SERVICE.

Eight and ninety-three one-hundredths miles of underground cable were installed during the year and 1.51 miles of cable withdrawn, leaving the total amount of cable in service at the end of the year 123.30 miles.

One and ninety-two one-hundredths miles of aerial cable were installed during the year, the total amount in service at the close of the fiscal year being 6.21 miles.

Twenty fire-alarm boxes were placed in service during the year, making the total at the end of the year 552.

The number of fire alarms received and transmitted during the year was 1,234, of which 81 were false.

The total number of patrol boxes in service at the end of the year was 378.

The total number of poles connected with steam and street railroads, telephone, telegraph, electric-light, and District of Columbia telegraph and telephone service in the District of Columbia is 15,711 line poles and 791 guide poles, a total of 16,502.

The fees collected for the inspection of private electric wiring in buildings by the electric engineer was \$5,518.60.

#### GAS AND METER INSPECTION.

By the provisions of the public utilities act, approved March 4, 1913, the office of the inspector of gas and meters was transferred from the Commissioners of the District of Columbia to the Public Utilities Commission on that date.

The inspector of gas and meters has reported the operations of his office for that portion of the fiscal year from July 1, 1912, to March 3, 1913, inclusive. His report from March 4, 1913, to the end of the fiscal year will be included in the annual report of the Public Utilities Commission.

The inspector reports that during the period July 1, 1912, to March 3, 1913, inclusive, his office inspected and tested 16,450 gas meters and collected fees for these tests amounting to \$4,497.30.

The legal requirement regarding the illuminating power and purity of gas provides that the illuminating power shall equal 22 candles. Gas is supplied by two public service corporations—the Washington Gas Light Co. and the Georgetown Gas Light Co. Tests are made at four stations. The gas supplied is a mixture in varying proportions of coal gas and carburetted water gas.

On 14 days during the year it was found that the gas furnished by the Washington Gas Light Co. was below the legal standard, and on 26 days during the year the gas supplied by the Georgetown Gas Light Co. was found below the legal standard.

#### AUTOMOBILE BOARD.

The automobile board examined 2,944 persons for permits to operate motor vehicles in the District of Columbia, being an increase of 551 over the number examined during the preceding year.

Permits were issued to 2,183 applicants to operate vehicles of the gasoline type, 223 of electric type, 19 of the steam type, 312 for motor cycles, and 111 to operate motor vehicles of the United States and the District of Columbia used for public business. Of those examined, 96 applicants were refused license. Two permits were revoked on the recommendation of the major and superintendent of police.

The revenue received from these permits was \$6,246, an increase over the preceding year of \$224. In addition to these fees the sum of \$572 was paid by nonresidents under the police regulation requiring nonresidents to pay fees equal in amount to those paid in the place of their residence.

The automobile board also issued 3,936 identification number tags to motor vehicles—146 for electric passenger vehicles, 64 for electric trucks, 2,730 for gasoline passenger vehicles, 297 for gasoline trucks, 24 for steam trucks, and 675 for motor cycles; also 100 for motor vehicles of the United States and the District of Columbia. The revenue received from this source amounted to \$7,872, an increase over the preceding year of \$24.

Nonresidents of the District of Columbia also paid for identification tags the sum of \$1,939.58.

#### NEW AUTOMOBILE LAW.

The commissioners have prepared and submitted to Congress a draft of a bill to regulate the licensing, registration, and operation of motor vehicles in the District of Columbia. The object of this bill is to vest in the Commissioners of the District of Columbia general and complete authority to regulate automobile traffic in the District of Columbia. At present this subject is regulated by acts of Congress and regulations of the commissioners. It is intended by the commissioners' bill to repeal all of the existing laws and regulations on the subject and to authorize the commissioners to make all necessary regulations and impose all necessary license fees and to fix penalties for the violation of such regulations.

Under the present laws and regulations but one registration license is authorized to be issued and this is perpetual. The commissioners believe there should be an annual registration and an annual license fee paid for automobiles. Existing law further provides for an annual wheel tax on motor vehicles, and also fixes the speed of such vehicles. The commissioners believe that instead of an annual wheel tax there should be the annual registration fee referred to above, and that the speed of motor vehicles should be left to their discretion to be regulated from time to time as the necessities of the case require. It would be the intention of the commissioners in exercising the authority they request be conferred upon them to prepare and adopt usual and reasonable regulations such as are in force in other jurisdictions governing the matter of automobile registration and traffic, and under such general authority they would have the power to enter into reciprocal relations with other jurisdictions.

#### PERMITS.

The permits issued by the permit clerk of the engineer department for various permits other than building permits amounted to 13,079, for which fees were paid, and 6,985 for which no fees were paid, making a total of 20,064. This was a decrease under the preceding year of 7,031. The fees paid for these permits amounted to \$13,079, a decrease under the preceding year of \$4,831.

#### EXAMINATION OF STEAM ENGINEERS.

The report of the board of examiners of steam engineers shows that 52 examinations were held and 119 applicants examined, of which 27 were licensed and 92 rejected as incompetent. The number of appli-

cants examined was 26 less than those examined during the preceding year, and the board states that this was due principally in the advance made in generating power by means other than steam. Licensed engineers are not required for motive power other than steam.

#### ROCK CREEK PARK.

The jurisdiction over Rock Creek Park is placed by law under the Commissioners of the District of Columbia and the Chief of Engineers, United States Army, acting jointly.

The amount appropriated for the care and maintenance of the park during the year was \$25,000.

The principal work done in the park during the year was the grading and macadamizing of a portion of Beach Driveway above Military Road, 2.3 miles in length. This work, which was begun last year, was completed during the present fiscal year, and provided a very desirable addition to the park drives. The total cost of the roadway, which was graded 24 feet wide and macadamized 16 feet wide, was \$16,574. The stone used in the macadamizing was quarried in the park.

On the completion of this road work was begun on a road extending westerly from Beach Driveway across the northern end of the park, about one-half mile in length, and this work has been nearly completed.

The macadamized roads in the park were all oiled and kept in good repair and the bridle paths and footpaths were maintained in good condition. Retaining walls and new approaches were completed at the east end of the bridge at old Pierce's mill, and a public convenience at Pierce's mill was completed.

The mileage of the roads in the park at the close of the year was as follows:

	Miles.
Macadamized county roads, used for all classes of traffic-----	1.9
Macadamized park roads, restricted to light traffic-----	8.2
Earth roads, restricted to horse traffic-----	1.0
Total-----	11.1

There are in addition about 20 miles of bridle paths and about 5 miles of footpaths.

During the next fiscal year it is intended to complete walls at the west end of the bridge at Pierce's mill, to construct connecting roads in the park, and to expend the balance of any appropriation made for the care and maintenance of existing roads, paths, etc., in the park.

Sufficient corn and hay was raised in the park during the year to feed the horses used in the work of improvement.

With the cooperation of the Bureau of Forestry, Department of Agriculture, an arboretum was established on the north side of Military Road near Camp Good Will and a large number of trees of various kinds were planted.

A dwelling and barn at the north end of the park caught on fire and were completely destroyed during the year.

The construction of bridle paths and footpaths was continued and many extensions were made. The meadow at the north end of the park was fenced in and was planted in corn.



## ANACOSTIA RIVER AND FLATS.

Appropriations aggregating \$300,000 have been made in the past three years for the reclamation and improvement of the Anacostia River and Flats from the Anacostia Bridge to the District line to be expended under the direction of the Chief of Engineers, United States Army.

In connection therewith, the District appropriation act for the fiscal year 1914 authorized the condemnation of the water frontage on each side of the Anacostia River, from the Anacostia Bridge to the District line, between the high-water lines and the 10-foot contour lines, and all land in the river bed within these limits between high-water lines, the title to which was not in the United States, in the event that such land could not be purchased at a price satisfactory to the Secretary of War. In this act the commissioners were directed to institute condemnation proceedings, at the request of the Secretary of War, and such request having been made as to a portion of these lands, condemnation proceedings are about to be undertaken.

An additional appropriation of \$100,000 for this work has been included in the estimates of the commissioners for the fiscal year 1915.

## HARBOR FRONT.

The total amount received from rentals of wharves and river frontage placed by law under the control of the commissioners was \$25,612.24, divided as follows:

Potomac River front.....	\$22,966.24
Anacostia River front.....	1,110.75
James Creek Canal.....	1,535.25
Total.....	25,612.24

The actual water frontage in the District of Columbia devoted to commerce, with the exception of canals, is about 2 miles. The total available water frontage is about 18 miles, of which about 8 miles is set aside for parks and purposes of the United States. The largest amount of wharf property under the control of the commissioners is that along the Washington Channel. The total frontage along this channel is 9,275 linear feet, of which 4,675 linear feet, between the grounds of the War College and the south curb line of N Street, is under the control of the United States, and the remaining 4,600 linear feet is under the control of the commissioners. Along this frontage are located the harbor police station, dock of the harbor boat, house and dock of the fire boat, the District morgue, a District property yard, and the municipal fish wharf and market. The lower portion of the frontage is used for river excursion traffic and steamboat traffic between Washington, Baltimore, Norfolk, and points along the lower river, and the upper portion is used for wood, lumber yards, etc.

The leases along this frontage were for periods not exceeding 10 years, and most of them expired on March 15, 1913. New leases have been entered into for 5-year periods from that date at an increased rental. The basis of these rentals is a net return of 4 per cent on the estimated value of the wharf property. These leases provide that the lessees shall maintain and keep the property in repair.

The property along the Anacostia River is largely undeveloped, owing to the uncertainty of ownership of abutting land and riparian rights, and steps are being taken by legal proceedings under the direction of the Attorney General to settle the question of title.

The wharves along the Georgetown Channel of the river are privately owned, except the foot of streets. Two leases have been entered into with private parties, one for the foot of Thirty-third Street and one for the foot of G Street.

The portion of James Creek Canal from N Street to P Street, a distance of 1,000 feet, is under lease for commercial purposes. From P Street to the outlet of the canal on the Anacostia River, a distance of about 3,000 feet, the canal extends along the grounds of the War College and Engineer School.

#### IMPROVEMENT OF THE HARBOR FRONT.

It will soon become necessary to rebuild the wharf structures along the Washington Channel, and when this is done it should be along some definite plan. The commissioners believe they should be authorized to prepare such a plan and submit it to Congress, and they have included in their estimates to Congress this year an item for this purpose.

#### SEWERS.

The total length of main and pipe sewers constructed during the year was about 27 miles. The total length of main and pipe sewers in the District of Columbia on June 30, 1913, was 644.28 miles; of this 130.90 miles are main sewers and 513.38 miles are pipe sewers. The total cost of the sewerage system to June 30, 1913, was \$11,922,177.04. The total cost of the sewage-disposal system to June 30, 1913, was \$4,366,624.43, making the total cost of the complete system to June 30, 1913, \$16,288,801.47.

Twenty-three billion five hundred and eighteen million gallons of sewage and about 840,000,000 gallons of storm water were pumped at the Sewerage Pumping Station. The pumping plant was operated without interruption of service and received the sewage from practically the entire District, delivering it to the outfall. Nine million three hundred thousand six hundred and eighty-four pounds of coal were consumed in this service.

The outfall of the sewage-disposal system, on the Potomac River near Shepherds, was under constant observation during the year, and the general condition of the waters in the vicinity of the outfall continued excellent under all conditions of tides and river flow. Examinations of the river bottom and the beaches show no evidence of sludge or deposits, and the surface was found substantially free of oil. Oxygen tests show a very good condition of the water.

#### STREAM POLLUTION.

Work was continued during the year on the study of the streams flowing into and through the District as to the extent of their pollution by the discharge of sewage therein from neighboring Maryland towns. Within the District sewage is not permitted to enter these

streams. Their pollution by outside sewage, however, is now very apparent and is increasing. With the constant growth of population immediately outside of the District in Maryland, some steps will be necessary to divert sewage from these streams, and the matter is being taken up with the health department of the State of Maryland.

#### SUBURBAN SEWERS.

The following suburban sewers were constructed during the year:

Section.	Length.	Cost.
	<i>Feet.</i>	
1. County west of Rock Creek.....	35,942	\$71,575.07
2. County east of Rock Creek.....	37,024	147,119.53
3. County west of Anacostia River.....	28,085	87,705.50
4. County east of Anacostia River.....	8,528	170,155.49
5. Washington City.....	17,005	71,270.25

#### SEWAGE-DISPOSAL SYSTEM.

Under the sewage-disposal system the last section of the east side intercepting sewer, 653.81 linear feet in length, was completed during the year; the second section of the Rock Creek main intercepting sewer, between Massachusetts Avenue and Connecticut Avenue, was completed, and the third section, between Connecticut Avenue and Adams Mill Road, has been almost completed; the fourth section, extending to Klinge Road, was placed under contract; sections 1 and 2 of the Anacostia main intercepting sewer between Poplar Point and Thirteenth Street SE., were completed, and section 3 begun during the year, a total of 7,200 linear feet being constructed.

#### WATER MAINS.

Twenty-six and two-tenths miles, or 138,506 feet, of water mains of all sizes were laid during the year, at a total cost of \$212,479.48. The total length of water mains now in service is 3,031,997 feet, or 575 miles.

Two hundred and thirteen fire hydrants, 3 public hydrants, 2 public sanitary fountains, and 1 public horse fountain were erected during the year, and 108 fire hydrants, 14 public hydrants, and 4 public wells were abandoned, making the total number in service at the end of the year as follows: Fire hydrants, 3,166; public hydrants, 204; public sanitary drinking fountains, 11; public horse fountains, 148; public wells, 54, of which wells 45 are deep wells and 9 shallow wells.

Among the important projects of the year were the extension of the first high service to 15 city blocks in the territory bounded by Eleventh and Seventeenth Streets, H Street and New York Avenue, which was formerly supplied by gravity and which increased the water pressure about 70 feet over this area; the erection of three steel towers of 140,000 gallons capacity each, with the necessary mains, on the east side of the Anacostia River, one at Thirtieth and R Streets SE., one at Tenth Street and Alabama Avenue SE., and one in the grounds of the Stanton School at Good Hope, D. C. A new pumping station was

built and equipped at Eighteenth and R Streets SE. for the service of all territory lying on the east side of the Anacostia River.

#### WATER CONSUMPTION AND WASTE.

The mean total daily water consumption for the year was 57,282,000 gallons, which is 4,708,000 per day less than for the preceding year, a decrease of  $7\frac{1}{2}$  per cent. Based on a population of 353,000, this gives a per capita rate of 162, a decrease of 17 gallons per capita, or  $10\frac{1}{2}$  per cent under the preceding year. This decrease is in part due to the unusual mild winter of 1912-13.

By means of the pitometer service for the prevention of water waste a total underground leakage was found and stopped amounting to 4,196,000 gallons daily. This leakage is much less than heretofore, and the pitometer division is performing good service in preventing water waste. The total expenses of this division were \$37,688.20.

The total pumpage of water during the year was 9,367,279,700 gallons, which is 740,507,300 gallons less than during the preceding year. The cost of operation, supplies, and repairs, including coal, was \$48,949.39, making the total operative cost of pumping 1,000,000 gallons \$4.62, as compared with \$3.58 during the preceding fiscal year.

#### WATER REVENUES AND EXPENDITURES.

The water revenues for the year amounted to \$790,541.70, an increase of \$108,421.27 over the preceding year. Unexpended balances, deposits made for special work, and transfers from other appropriations amounting to \$125,153.27 made the total funds available for expenditure during the year \$915,695.67.

The expenditures for all purposes amounted to \$854,477.38, leaving a nominal balance of \$61,218.29 at the close of the year, as against a nominal balance at the close of the last fiscal year of \$110,230.06. The expenditures were 11 per cent greater than the expenditures for the preceding fiscal year.

Water is furnished free to orphan asylums, hospitals, schools, and charitable institutions under authority of law to the extent of 14,693,000 cubic feet. This is based on a per capita allowance of from 60 to 100 gallons per day, dependent on the character of the institution. All water in excess of that allowed is charged for at meter rates, 4 cents per 100 cubic feet. This excess of allowance amounted to 3,411,500 cubic feet.

#### WATER METERS.

Ten thousand one hundred and fifty water meters were installed during the year and 105 discontinued, making the total number now in use 33,656. The number of water services is 65,732 and the percentage of services metered 51. The average cost of installing water meters by the District of Columbia during the year was \$10.98, including the cost of meter, which was \$5. The average cost of repairs to meters was 33 cents, and of reading 12 cents. The rate charged for water on metered services during the year was 4 cents per 100 cubic feet for all used in excess of 7,500 cubic feet, for which a mini-

munum charge of \$4.50 was made. The average annual payment where meters were installed by the District of Columbia was \$5.35. Water-rent bills are delivered to the householder annually at the minimum rate of \$4.50 per annum, which allows the use of 7,500 cubic feet of water, or 56,100 gallons, and if on actual measurement the water is found to have been used in excess of this amount a bill is rendered for such excess at the rate of 4 cents per 100 cubic feet.

On the water services which are not metered water for domestic purposes is charged for according to the number of stories and frontage. For premises of two stories with a front width of 16 feet or less the minimum rate is \$5 per annum; for each additional front foot or fraction thereof 31 cents is charged. For each additional story one-third of the charges as computed above is added. For business premises not metered rates vary from \$1 to \$25 per annum. Where the rate is \$25 or more a meter is required to be installed at the expense of the consumer.

#### PROPERTY ACCOUNTABILITY.

On March 27, 1913, the commissioners designated the auditor, the superintendent of the water department, and the purchasing officer as a committee with instructions to recommend to them a system of property accountability and records.

In the various branches of the District government there are kept storehouses for District property, and the present system of accountability is based upon an original inventory taken under an order of the commissioners, supplemented by quarterly returns showing the receipt and expenditure of property. While this system was found to be fairly satisfactory, it was believed to be lacking in certain principles and details, due largely to the fact that it was organized with a view to its operation upon the most economical lines that were practicable with the existing clerical force which could be assigned to the work.

The committee, after giving careful consideration to the subject, made a preliminary report to the commissioners under date of June 5, 1913, and as one of the first steps to be taken toward an improvement in present conditions recommended the establishment of a central storehouse and receiving depot, with the object of permitting the purchase and storage of supplies in wholesale lots, and their economical distribution.

The commissioners believe this recommendation to be a wise one, and have incorporated in their estimates for the ensuing fiscal year an item for the erection of such a storehouse, with the necessary operating force and means of transportation for the distribution of supplies, together with the establishment of a general fund to be used for the purchase of such supplies, this fund to be a continuing one and to be reimbursed from appropriations as supplies are issued chargeable to such appropriations. If funds are provided to carry out this scheme of handling supplies the commissioners believe that it will result in great economy and efficiency.

The committee has not yet made a final report, and still has under consideration methods of providing for proper and efficient care of all District property, including a proper system of receipt, account-

ability, and disbursement of property, with the same safeguards as are now provided for the receipt, accountability, and disbursement of money appropriated for the expenses of the government of the District of Columbia.

The preliminary report of the committee has been approved by the commissioners and directions given to arrange for the details necessary to carry out its recommendations.

#### COST KEEPING.

The engineer commissioner on the same date designated a committee consisting of the superintendent of the water department, the superintendent of street cleaning, and the engineer of bridges to recommend a modern system of cost keeping, to enable accurate, detailed unit costs to be kept of all work done by the engineer department of the District government. This committee made a preliminary report under date of May 27, 1913, and a supplemental report under date of September 3, 1913, in which it recommended the adoption of such a system. This report has been tentatively adopted, and the system has been installed in the water department for the purpose of trying it out. If it proves satisfactory after such trial it is the intention of the commissioners to apply the system generally in those branches of the District government where the advisability of establishing such a system is apparent.

With the new system the commissioners believe it will be possible to determine the unit cost of every class of work done by any branch of the District government, comparing the costs in the different branches of doing the same or a similar class of work, and that with this information economies can be introduced and methods of construction and operation improved upon.

#### PARK.

The commissioners have included in their estimates for the fiscal year 1915 an item of \$375,000 for the acquisition of a park lying adjacent to the northeast section of the city. The tract selected is a part of what is known as the Patterson tract, lying north of Florida Avenue NE., bounded on the east by the grounds of the Columbia Institution for the Deaf and Dumb, on the west by New York Avenue and the property of the Baltimore & Ohio Railroad Co., and on the north by Fairview Avenue. The tract selected contains about 81 acres.

There is now no large park in the northeast section of the city and District, and the commissioners believe that this park should be acquired at the present time, as otherwise this beautiful tract of land may be subdivided for building purposes.

\* \* \* \* \*

Very respectfully,

OLIVER P. NEWMAN,  
FREDERICK L. SIDMONS,  
CHESTER HARDING,

*Commissioners of the District of Columbia.*

## ORGANIZATION OF THE ENGINEER DEPARTMENT, D. C.

Lieut. Col. CHESTER HARDING, Corps of Engineers, United States Army,  
*Engineer Commissioner, D. C.*  
Capt. MARK BROOKE, Corps of Engineers, United States Army, } *Assistants.*  
Capt. J. L. SCHLEY, Corps of Engineers, United States Army, }

### UNDER THE IMMEDIATE SUPERVISION OF THE ENGINEER COMMISSIONER.

#### RECORD DIVISION—

D. E. GARGES, *Chief Clerk.*

#### WATER DEPARTMENT—

W. A. McFARLAND, *Superintendent.*

##### Water rates—

G. W. WALLACE, *Water Registrar and Chief Clerk.*

#### MUNICIPAL ARCHITECT—

SNOWDEN ASHFORD.

#### WHARF COMMITTEE—

DANIEL E. GARGES, *Chief Clerk, Engineer Department.*

D. E. McCOMB, *Engineer of Bridges.*

RUSSELL DEAN, *Harbor Master.*

#### BOARD FOR CONDEMNATION OF INSANITARY BUILDINGS—

Capt. J. L. SCHLEY, *Assistant to Engineer Commissioner.*

WILLIAM C. WOODWARD, *Health Officer.*

MORRIS HACKER, *Inspector of Buildings.*

#### ROCK CREEK PARK—

L. R. GRABILL, *Assistant Engineer in Charge.*

#### DISTRICT BUILDING—

Capt. MARK BROOKE, } *Superintendents.*  
Capt. J. L. SCHLEY, }

### UNDER THE IMMEDIATE SUPERVISION OF CAPT. BROOKE.

#### HIGHWAYS (STREETS, ROADS, BRIDGES, ETC.)—

C. B. HUNT, *Engineer of Highways.*

##### Sidewalks and alleys—

H. N. MOSS, *Superintendent of Streets.*

Construction and maintenance of suburban roads—

L. R. GRABILL, *Superintendent of Suburban Roads.*

Construction and care of bridges—

D. E. McCOMB, *Engineer of Bridges.*

#### SEWER CONSTRUCTION AND MAINTENANCE—

ASA E. PHILLIPS, *Superintendent of Sewers.*

#### STREET AND ALLEY CLEANING, COLLECTION OF GARBAGE, ETC.—

J. W. PAXTON, *Superintendent of Street Cleaning.*

#### ASPHALTS AND CEMENTS—

J. O. HARGROVE, *Inspector of Asphalts and Cements.*

#### SURVEYOR'S OFFICE (including street extensions)—

M. C. HAZEN, *Surveyor.*

#### TREES AND PARKINGS—

TRUEMAN LANHAM, *Superintendent of Trees and Parkings.*

#### PERMITS—

H. M. WOODWARD, *Permit Clerk.*

#### AUTOMOBILE BOARD—

H. M. WOODWARD, *Secretary.*

### UNDER THE IMMEDIATE SUPERVISION OF CAPT. SCHLEY.

#### BUILDING INSPECTION—

MORRIS HACKER, *Inspector of Buildings.*

Plumbing plans and inspection—

A. R. MCGONEGAL, *Inspector of Plumbing.*

#### ELECTRICAL DEPARTMENT—

W. C. ALLEN, *Electrical Engineer.*

#### GAS AND METER INSPECTION—

E. G. RUNYON, *Inspector of Gas and Meters.*

# REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT OF THE DISTRICT OF COLUMBIA.

## REPORT OF THE ENGINEER OF HIGHWAYS.

WASHINGTON, D. C., October 1, 1913.

SIR: I have the honor to submit the following report of the operations of the office of the engineer of highways for the fiscal year ended June 30, 1913.

The total amount of funds appropriated by Congress and deposited by corporations and others for disbursement by the surface division aggregated \$1,217,000, of which \$222,500 was for paving sidewalks and alleys in all parts of the District; \$461,000 was for paving new roadways and repairing old roadway pavements; \$252,000 for construction and repair of suburban roads, including the Quarry Road entrance to the Zoological Park; \$108,000 for construction and repair of bridges; \$15,000 for grading streets and avenues; \$7,000 for sidewalks and curbs around Government reservations and parks; and \$152,000 was spent in repairing pavements disturbed by other branches of the District government and by various corporations and others.

*Summary of work under appropriation for improvements and repairs for year ended June 30, 1913.*

Character of work.	Streets and avenues.	County roads and suburban streets.	Repairs to asphalt pavements.	Total.
Sheet asphalt paving.....square yards..	20,198.57	601.06	45,462.36	66,261.99
Asphalt surface.....do.....			74,906.00	<sup>1</sup> 74,906.00
Vitrified-block gutters.....do.....	2,282.46	422.89	7,470.45	10,175.80
Asphalt-block paving.....do.....		6,135.28		6,135.28
Bituminous macadam.....do.....	7,312.13			7,312.13
Cement roadway pavement.....do.....		13,266.67		13,266.67
Cement gutters.....linear feet.....		5,142.13		5,142.13
Macadam roadway.....square yards.....		35,232.00		35,232.00
Cobble and granite gutters.....do.....		10,000.00		10,000.00
Granite and bluestone set.....linear feet.....	6,257.26	8,668.69	12,239.19	27,165.24
Cement curb formed and laid.....do.....		6,755.21		6,755.21
Grading.....cubic yards.....	8,116.15	163,923.43	1,606.76	173,646.34
Curb reset.....linear feet.....	5,195.94	3,074.52	25,423.78	33,694.24
Old asphalt removed.....cubic yards.....			12,938.68	12,938.68
Old cobble and granite removed.....square yards.....	4,087.94	3,306.00		7,393.94
Sidewalks laid under assessment and permit, square yards.....				64,741.90
Sidewalks and curbs around government reservations, square yards.....				3,790.78
Alley pavements laid:				
Asphalt block, assessment and permit, square yards.....				18,214.00
Vitrified block, assessment and permit, square yards.....				23,422.00
Vitrified block (special), streets and avenues, square yards.....				955.00
Sidewalks, whole cost paid by property, square yards.....				80.75

<sup>1</sup> Resurfacing by heater included in 74,906.81.

The following is a list of tables appended to the report:

TABLE A.—Street railways in the District of Columbia July 1, 1913.

TABLES B AND C.—Statement of character and extent of street pavements.

TABLE E.—Schedules of work on streets and avenues and county roads, and suburban streets.



TABLE F.—Repairs to asphalt and coal-tar pavements.

TABLE G.—Work done for street railway companies.

TABLE H.—Work done by day labor under appropriations for repairs to streets, avenues, and alleys.

TABLE I.—Regular permit work.

TABLE K.—Assessment work.

TABLE L.—Replacing and repairing sidewalks and curbs around public reservations.

TABLE M.—Miscellaneous work.

TABLE O.—Repairs to cuts by plumbers and others.

TABLE P.—Grading streets, alleys, and roads.

The types of roadway pavement laid were sheet asphalt, asphalt block, asphaltic concrete and cement concrete. The contract prices paid for these constructions were: For sheet asphalt, \$1.77 per square yard; for asphalt block, \$1.76 per square yard; for asphaltic concrete, on 6-inch concrete base, \$1.67 per square yard, and on broken stone base 99 cents per square yard; cement concrete 84 cents per square yard.

The resurfacing of roadways by the heater method was discontinued out of consideration for the fact that the relative economy of this method in comparison with the usually employed one of stripping and replacement is wholly dependent on the comparative life and maintenance cost of the two constructions, and time alone can establish these data. The area already resurfaced under the heater method, 170,000 square yards, is sufficient for this demonstration and should not be augmented until its superiority, all things considered, is fully established.

Forty-one thousand six hundred and thirty-six square yards of modern type of alley pavements were laid during the year, of which 23,422 square yards were vitrified block and 18,214 square yards asphalt block, both paved on gravel base.

The building of the Q Street Bridge across Rock Creek was of necessity delayed by the unexpected prolongation of the legal proceedings for condemnation of the site of the bridge and its approaches. Promptly after the court's confirmation of those proceedings, bids were taken for the work, but none of those received was within the limits of available funds. Modifications of the plans have been undertaken that will materially reduce the cost of the work and in the near future new bids will be asked.

The grading of the entrance to the Zoological Park at Harvard Street was completed during the year, about 100,000 cubic yards of material being deposited. The surface improvements will follow as promptly as the physical settlement of the embankments will justify.

The Cedar Street subway at Takoma Park was completed and opened to travel, thus eliminating a notably objectionable railroad grade crossing.

Under the project for elimination of grade crossings the few uncompleted items of construction work were delayed by considerations arising in part from the acquisition of the land south of the Union Terminal Station as an addition to the Capitol Grounds, but these and other circumstances should now permit the execution of the few unfinished construction details.

Cement sidewalks were laid under contract during the year to the exclusion of brick for new construction, as the comparative cost of the two types easily justifies the one used, in view of its superior qualities. The prices paid were 96 cents per square yard for urban and \$1.20 per square yard for suburban work.

The use for roadway pavement of two-inch asphalt-block on a concrete base and of cement concrete with an asphaltic skin coat were continued on a limited scale during the year with satisfactory results. The contract prices were: Asphalt block, \$1.76 per square yard; cement concrete, 84 cents per square yard.

The railroad grade crossings at Bennings should be eliminated in the interest of public safety. Designs and estimates for the work have been prepared and an appropriation is strongly urged.

#### ASPHALT PLANT.

Under the provisions of law contained in last year's appropriation act a portable asphalt plant has been purchased, erected and operated for about eight months. The machine selected after competitive bids had been received was the Warren Bros. make, with a nominal output capacity of 100,000 pounds per day. This machine cost \$5,000, and the total capital investment, including plant and street tools for minor repair work as well as labor cost of installation is \$6,900.

The plant was operated prior to July 1, 1913, on 156 working days, of which 17 were on a tentative and somewhat experimental basis. The total output of the plant to July 1 has been 103,145 cubic feet on a basis of measurement in the cart at the site of the work.

The various classes of product were manufactured as follows:

	Cubic feet.
Binder.....	10, 481
Top.....	11, 985
Old material.....	56, 771
Asphaltic concrete.....	23, 908
Total.....	103, 145

The output has been at the rate of about 150,000 cubic feet per annum.

The maintenance of the plant, including replacements and renewals, labor and material, has been \$925.74 for eight months, or a yearly rate of \$1,388.61 based on a period of 139 days' operation since November 11, 1912, for a total output of 92,753 cubic feet.

The labor cost for operating the plant, including miscellaneous labor of all kinds, haul of product to street under repair, cutting out, and miscellaneous street labor was \$0.207 per cubic foot.

The cost of the plant output for items named, which include all cost other than the material actually composing the products, was as follows:

Labor cost, as above, per cubic foot.....	\$0. 207
Fuel, oil, and waste at plant.....	. 021
Tool sharpening.....	. 005
Fuel, oil, and waste on street.....	. 007
Total.....	. 240
Overhead (cost of plant, \$6,900):	
Year's interest, at 3.5 per cent.....	241. 50
Obsolescence, at 20 per cent.....	1, 380. 00
Maintenance (per year).....	1, 388. 61
Total.....	3, 010. 11
Rate per cubic foot on yearly output of 150,000 cubic feet..	. 020
	. 260

The various formulas of ingredients used in the operations and the varying prices paid for the materials composing the products makes impracticable a simple statement of the total cost of the products; but for any particular formula of composition, such as, for example, asphaltic top, using Bermudez asphalt, or asphaltic binder, using the same cement, a statement of cost can be prepared from the above; thus—

*Top mixture Bermudez asphaltic cement, per cubic foot.*

(Contract price, \$0.57 per cubic foot.)

0.60 cubic foot building sand, at \$0.34½ per cubic yard; haul, \$0.60.....	\$0. 022
.60 cubic foot Arundel Bay sand, at \$1.25 per short ton.....	. 036
3.89 pounds limestone dust, at \$2.50 per short ton.....	. 005
10.35 pounds asphalt cement, at \$31.60 per short ton.....	. 164
	. 227
Manufacturing costs.....	. 260
Cost per cubic foot.....	. 487

*Binder mixture Bermudez asphaltic cement, per cubic foot.*

(Contract price, \$0.43 per cubic feet.)

1.18 cubic feet binder stone, at \$1.50 per cubic yard, f. o. b.....	\$0. 066
4.76 pounds asphalt cement, at \$31.60 per short ton.....	. 075
	. 141
Manufacturing costs.....	. 260
Cost per cubic foot.....	. 401

For purposes of the preceding comparison the inspectors on the annual roll who formerly supervised the contractor's work and who now serve as superintendents and foreman are not included in either cost statement. The cost of their services amount to a charge per cubic foot of \$0.026.

Similarly derived costs for other types of output are as follows:

*Top mixture Sun asphalt cement, per cubic foot.*

0.60 cubic foot building sand, at \$0.34½ per cubic yard; haul, \$0.60 .....	\$0.022
.60 cubic foot Arundel Bay sand, at \$1.25 per short ton .....	.036
3.89 pounds limestone dust, at \$2.50 per short ton .....	.005
10.35 pounds asphalt cement, at \$17 per short ton .....	.088
	<hr/>
Manufacturing costs .....	.151
	<hr/>
Cost per cubic foot .....	.260
	<hr/>
	.411

*Binder mixture Sun asphalt cement, per cubic foot.*

1.18 cubic feet binder stone, at \$1.50 per cubic yard, f. o. b. ....	\$0.066
4.76 pounds asphalt cement, at \$17 per short ton .....	.040
	<hr/>
	.106
Manufacturing costs .....	.260
	<hr/>
Cost per cubic foot .....	.366

*Asphalt concrete mixture with Bermudez asphalt cement, per cubic foot.*

0.825 cubic foot screenings, at \$1.53 per cubic yard, f. o. b. ....	\$0.046
.18 cubic foot building sand, at \$0.34½ per cubic yard; haul, \$0.60 .....	.006
3.29 pounds limestone dust, at \$2.50 per short ton .....	.004
8.13 pounds asphalt cement, at \$31.60 per short ton .....	.128
	<hr/>
	.184
Manufacturing costs .....	.260
	<hr/>
Cost per cubic foot .....	.444

*Old material mixture with Sun asphalt cement, per cubic foot.*

0.066 cubic foot screenings, at \$1.53 per cubic yard, f. o. b. ....	\$0.0037
.192 cubic foot building sand, at \$0.34½ per cubic yard; haul, \$0.60 .....	.0067
.73 cubic foot old material, at \$1.01 per cubic yard .....	.0276
2.10 pounds limestone dust, at \$2.50 per short ton .....	.0026
4.19 pounds asphalt cement, at \$17 per short ton .....	.0357
	<hr/>
	.0763
Manufacturing costs .....	.2600
	<hr/>
Cost per cubic foot .....	.3363

Although a formula is furnished by the office of the inspector of asphalts and cements, for each mixture, the quantities shown above do not in every case conform with the same. It is found necessary to change the proportion of the constituent parts on account of varying conditions of weather and material. This is especially so in the use of old material. In a great many instances, where the old material comes from some of the first asphalt pavements laid in the District, it is necessary to add a greater percentage of the new material to restore the life and wearing qualities.

The cost of hauling sand from the wharf, Tenth and Water Streets SW., is \$0.60 per cubic yard. All other materials entering into the composition of the output were delivered at the railroad sidings in the vicinity of the plant, and the cost of their unloading and handling is included in the labor cost of operating the plant.

The element of rental value of site of plant, taxes, and contractor's profits are not charges against these costs and account in some degree for the reduction in cost of product below contract prices. On the other hand, the plant is from its nature essentially less economical than a regular permanent plant. The cost of operation is not lessened by the various devices for handling materials cheaply that a permanent plant should possess, and the year's operations have been conducted by a force untrained in such work, and consequently in a degree inefficient from necessity.

In connection with the plant a Noyes crusher for breaking up old asphalt street material was purchased and installed, together with a portable engine and boiler to operate the same. The cost of this installation was \$1,910 and its maintenance \$175.50 for six months.

Manufacturing costs on this product per cubic yard were \$0.686 and the overhead cost was \$0.33, making a total cost per cubic yard of \$1.016. The large overhead cost is accounted for by the fact that it is impossible to operate the crusher to its full capacity, the supply of old material obtained in resurfacing and repair work being insufficient to keep this plant continually supplied.

I transmit herewith the report of the superintendent of suburban roads, the superintendent of streets, and the engineer of bridges.

Very respectfully,

C. B. HUNT,  
*Engineer of Highways.*

Capt. MARK BROOKE,  
*Captain, Corps Engineers, United States Army,  
Assistant to Engineer Commissioner.*

#### STATEMENT OF PER DIEM EMPLOYEES.

*Statement showing employees temporarily required in connection with street, road, and bridge construction and repairs, and appropriations and deposits from which paid during fiscal year ended June 30, 1913.*

#### SURFACE DIVISION.

Designation.	Number.	Rate per diem.
Assistant engineer.....	1	\$5.
Draftsmen.....	2	1 at \$5, 1 at \$3.50.
Transitman.....	1	\$4.
Inspectors.....	14	1 at \$5, 10 at \$4, 3 at \$2.
Copyists.....	7	2 at \$4 50, 2 at \$3.25, 2 at \$3, 1 at \$2.50.
Overseers.....	2	1 at \$4, 1 at \$3.50.

#### Appropriations from which paid:

Improvements and repairs, 1913.....	\$20,956.75
Elimination of grade crossings.....	28.00
Q Street Bridge across Rock Creek, D. C.....	1,964.00
Pennsylvania Avenue, bridge across Rock Creek.....	22.50
Quarry Road entrance to Zoological Park, D. C.....	1,479.25
Cedar Street subway.....	344.00
Total.....	24,794.50

#### REPORT OF THE SUPERINTENDENT OF STREETS.

WASHINGTON, D. C., *September 25, 1913.*

SIR: I have the honor to submit herewith the annual report of the operations under my charge, for the fiscal year ended June 30, 1913.

Table "H" is a summary of work done by day labor under the appropriation for "Current repairs to streets, avenues, and alleys." The cost of such work was \$61,352.10 including the repair of 3,500 dangerous holes. One-third of this amount was sidewalk and alley work, and the other two-thirds repairs to street roadways.

Table "I" is a list of work done under the permit system, wherein the property owners requested the improvement, and paid one-half the cost, the District paying the other half. The cost of this work was \$24,507.67.

Table K is a list of work done under the assessment system. One-half the cost of such work is charged against the abutting property. The total cost was \$179,761.17.

Table L is a list of work paid for from the appropriation for "Replacing sidewalks and curbs around public reservations." The amount expended under this class of work was \$6,404.24.

Respectfully submitted.

H. N. Moss,

*Superintendent of Streets, District of Columbia.*

To the ENGINEER OF HIGHWAYS.

## REPORT OF SUPERINTENDENT OF SUBURBAN ROADS.

WASHINGTON, September 2, 1913.

Sir: The appropriations expended wholly or partly under this office in the fiscal year ended June 30, 1913, were as follows:

Construction of suburban roads, and suburban streets.....	\$129,525
Repairs to suburban roads.....	140,000
Grading streets, alleys and roads.....	15,000
Quarry Road entrance to Zoo Park, etc. (incomplete).....	67,000

In addition to the above work all cuts in suburban streets except those in fixed pavements were repaired from deposits for the purpose by the suburban division.

Itemized statements of the above expenditures are submitted as appendices to this report.

The largest item of construction work was the new entrance from Sixteenth Street to the Zoo Park; the grading for which was nearly completed, and the roadways of Summit Place and the lower level of Quarry Road were macadamized. The grading and macadamizing of the south roadway of Tilden Street from Connecticut Avenue to the Zoo Park was another large construction item. The paving of the Cedar Street underground crossing of the Baltimore & Ohio Railroad was also completed.

The largest items of repair work were as follows, including all amounting to \$1,000 or over:

Repair of Broad Branch Road and Chevy Chase Drive.....	\$3,598.33
Broad Branch Road north of Chapell Road.....	1,010.70
Broad Branch Road south of Chapell Road.....	1,302.14
Rittenhouse Street, Broad Branch Road to Thirty-second Street.....	1,275.44
Sherman Avenue, Barry Place to Lamont Street.....	4,349.06
Georgia Avenue between Park Road and Buchanan Street.....	4,253.60
Eleventh Street NW., Florida Avenue to Park Road.....	1,606.94
North Capitol Street between V Street and Michigan Avenue.....	2,799.85
Bladensburg Road NE.....	2,684.60
Rhode Island Avenue NE., from Fourth Street eastward.....	1,919.13
Streets in High View.....	1,120.81
Nichols Avenue SE. south of Sheridan Street.....	2,957.11

Approximately \$21,000 was expended in oiling the more heavily traveled streets; about \$3,000 was expended for applications of tar, and about \$2,200 was expended for watering roads which could not be advantageously treated otherwise; making a total cost of over \$26,000 for dust suppression and prevention on suburban roads.

The use of bituminous macadam built by the penetration method was almost entirely discontinued; only one square of this class of construction being done.

In new construction concrete roadways with a bituminous surface were used in sections where permanent conditions had been reached.

Bituminous concrete will be used extensively in the coming year, this class of pavements having been found to be very satisfactory.

In roads with lighter travel, or mostly automobile travel, it was concluded that a water-bound macadam roadway, given a surface treatment of oil or tar after one year's use, was probably the most satisfactory and economical.

A table showing the costs of various classes of road construction done during the year is submitted below. The roads selected were believed to be normal examples of the various classes named.

The costs given are those of jobs representative of the class of construction and cover the cost of labor and material for surfacing only, including rolling. Cost of overhead charges is about 4 per cent additional.

*Cost of various methods of surfacing used in suburban road construction in the District of Columbia, 1912-13.*

Kind of construction.	Cost of road material at the work, per cubic yard.	Cost per square yard.	Cost per mile 1 foot wide.
1. Minnesota Avenue north of Pennsylvania Avenue: Gravel roadway 18 feet wide, graded 36 feet wide; surface composed of 9 inches of bank gravel when completed (gravel).....	\$0.49	\$0.276	\$161.80
2. Beach Drive, Rock Creek Park: Water-bound macadam roadway, 16 to 18 feet wide, surface composed of 4 inches of native stone and 2 inches of crushed limestone when compacted, average (crushed stone).....	1.63	.46	270.80
3. Canal Road, railroad crossing to Chain Bridge: Bituminous macadam, pouring method, 2-coat work; surface composed of 6 inches of new trap rock, the upper 2 inches being filled with bitumen; Bermudez and Sarce (trap rock).....	2.28	1.01	587.25
4. Mount Pleasant Street, Columbia Road to Park Road: Bituminous concrete, mixing method; surface composed of 2 inches of new trap rock on an old macadam surface after scarifying, covered with a 2-inch layer of bituminous (Bermudez) concrete mixed at asphalt plant (trap rock).....	2.07	1.11	652.27
5. Columbia Road east of Georgia Avenue: Cement concrete roadway in residence section; surface composed of 6 inches of Portland cement concrete base in proportions 1:2:5, using gravel as aggregate; surface covered with thin coat of tar and fine gravel (washed gravel), about.....	1.50	.935	548.30

Average cost of labor (8-hour days), about \$1.60 per day.

Average cost of teams (8-hour days), about \$4 per day.

Average cost of excavation (heavy), \$0.28 to \$0.30 per cubic yard.

Average cost of excavation (light), \$0.39 to \$0.50 per cubic yard.

*Repairs to suburban roads, appropriation 1913.*

Job No.	Location.	Work.	Cost.
<b>SECTION 1.—Potomac River to Rock Creek.</b>			
4000	Watering various roads.....		\$312.00
4017	Garfield Street, west of Thirty-ninth Street.....	Repair gutters.....	159.50
4021	Woodley Road, between Connecticut Avenue and Twenty-seventh Street.....	Repair.....	188.56
4037	S Street NW., between Thirty-fifth and Thirty-sixth Streets.....	do.....	10.50
4039	Wisconsin Avenue, between Garfield and Massachusetts Avenues.....	do.....	389.50
4045	Thirty-sixth Street NW., between R and S Streets.....	do.....	55.50
4056	Canal Road, between Aqueduct and Chain Bridges.....	do.....	630.02
4058	R Street NW., between Thirty-sixth and Thirty-seventh Street.....	Resurface.....	144.00
4059	Gordon's subdivision, Chevy Chase.....	Repair.....	988.41
4060	Garrison Street, between Baltimore and Forty-first Streets.....	do.....	237.31
4086	Cleveland Park.....	Gutters.....	294.45
4091	V Street NW., between Conduit Road and Forty-ninth Street.....	Repair.....	534.14
4093	Fessenden Place, across Forty-second Street.....	Flag crossing.....	36.50
4101	Grant Road, between Connecticut Avenue and Broad Branch Road.....	Repair.....	343.69
4103	Rock Creek Ford Road, from Thirty-second Street to Swart Road.....	do.....	637.38
4106	Canal Road, from Aqueduct Bridge to Foxhall Road, and Wisconsin Avenue, from Thirty-seventh Street north.....	Tascoil.....	466.18
4010	Thirtieth Street, north of Brandywine Street.....	Improve.....	169.56
4118	Connecticut Avenue, between Cathedral Avenue and Chevy Chase.....	Oil.....	1,035.44
4130	Massachusetts Avenue, between Nebraska Avenue and Murdock Mill Road.....	Grade.....	145.12
4131	Ridge Road.....	Repair.....	217.50
4137	Across Highland Avenue, west side of Newark Street.....	Lay terra-cotta pipe.....	31.75
4138	Ross Place, north of Macomb Street.....	Cobble gutters.....	213.00
4141	Chevy Chase Drive and Broad Branch Road.....	Broken stone.....	3,598.33
4151	Twenty-seventh Street NW., between Garfield and Cathedral Avenues.....	Repair.....	60.87
4166	Thirty-seventh Street NW., between R and Back Streets.....	Repair and clean gutters.....	118.04
4175	Broad Branch Road, from District of Columbia line to Chapel Road.....	Repair.....	1,010.76
4176	Klingie Ford Road, from Rock Creek to Woodley Road.....	do.....	93.75
4182	Connecticut Avenue, south of Klingie Road, Atlantic Westrumite Co. (north of bridge, \$579.63; south of bridge, \$343.83), preliminary work, day's labor.....	Surface treatment.....	923.46 994.62

*Repairs to suburban roads, appropriation 1913—Continued.*

Job No.	Location.	Work.	Cost.
<b>SECTION 1.—Potomac River to Rock Creek—Continued.</b>			
4188	Connecticut Avenue Bridge.....	Oil and sand.....	\$278.32
4199	Rittenhouse Street, west of Broad Branch Road.....	Terra-cotta pipe.....	180.45
4205	Broad Branch Road, from Rock Creek Park to Chapel Road..	Stone and screenings..	1,302.14
4208	Rittenhouse Street, between Broad Branch Road and Thirty-second Street.....	Macadam.....	1,275.44
4210	Highland Place, between Thirty-third and Thirty-fourth Streets.....	Repair.....	22.88
4242	Canal Road, from Aqueduct Bridge to Chain Bridge.....	Clean gutters.....	684.26
4250	Tunlaw Road.....	Repair.....	261.32
4268	Chapel Road, between Connecticut Avenue and Broad Branch Road.....	do.....	48.58
4308	Canal wall.....	do.....	52.75
4237	Bancroft Place, between Twenty-third and Twenty-fourth Streets.....	do.....	96.75
4251	New Cut Road, between Thirty-fifth Street and Foundry Branch.....	do.....	45.44
4237	Bancroft Place, between Twenty-third and Twenty-fourth Streets.....	do.....	96.75
4274	Northwest section.....	Hauling sand.....	216.34
4304	Various streets.....	Oil.....	3,247.18
4335	Idaho Avenue, north of Woodley Road.....	Repair.....	71.50
Dangerous holes and minor repairs.....			21,919.88
			8,545.72
			<b>30,465.60</b>
<b>SECTION 2.—Rock Creek to North Capitol Street and Riggs Road.</b>			
4000	Watering various roads.....		741.00
4008	Across Rock Creek Church Road to Rock Creek Cemetery.....	Lay flag crossing.....	22.50
4019	Sherman Avenue, between Barry Place and Lamont Street.....	Repair.....	4,349.06
4024	Adams Mill Road, from Zoo entrance to Kenyon Street.....	do.....	327.25
4025	North end of Sixteenth Street Bridge.....	Catch basin.....	342.01
4026	Georgia Avenue NW., between Park Road and Buchanan Street.....	Repair.....	4,253.60
4038	Georgia Avenue, from Rock Creek Church Road to Buchanan Street.....	Oil.....	513.63
4043	Blagden Avenue, between Sixteenth Street and Rock Creek Park.....	Repair.....	155.39
4044	Park Road, and Klinge Road, and Pierce Mill Road, from Nineteenth Street to Rock Creek Park.....	Oil.....	118.50
4053	Oakdale Street NW., between Fourth and Fifth Streets.....	Repairs.....	267.50
4054	Otis Street NW., between Georgia Avenue and New Hampshire Avenue.....	Resurface.....	214.25
4055	Quebec Street, between Warder Street and Georgia Avenue.....	Repair.....	475.81
4061	Belmont and Fifteenth Streets, to Piney Branch Bridge.....	Excavating.....	166.00
4062	Military Road.....	Tarvia A.....	330.18
4063	Fourteenth Street NW., Spring Road to Kennedy Street.....	do.....	797.58
4064	Streets in Takoma Park.....	Repair.....	490.31
4065	Streets in Brightwood Park.....	do.....	179.25
4066	Streets in Petworth.....	do.....	304.18
4067	Streets in Saul's subdivision.....	do.....	299.25
4070	Meridian Street NW., between Fourteenth and Center Streets.....	Tarvia.....	182.71
4072	Blair Road, between Cedar Street and Riggs Road.....	Repair and gravel.....	258.56
4073	Allison Street NW., between Fourteenth and Fifteenth Streets.....	Gutters.....	147.50
4074	Shepherd Road.....	Repairs.....	312.37
4084	Euclid Street, between Sherman and Georgia Avenues.....	do.....	487.74
4089	Military Road, Blagden Avenue and Sixteenth Street, between Columbia Road and Kennedy Street.....	Tarvia.....	367.96
4090	Newton Street NW., between Park Place and Warder Street.....	Repairs.....	239.25
4092	Champlain Avenue, between Florida Avenue and Kalorama Road.....	do.....	204.00
4105	Bryant Street, between First and Second Streets.....	do.....	191.40
4107	Whittier Street between Lowell and First Streets.....	Shape.....	32.25
4023	Various roadways.....	Macadam.....	791.86
4108	Fourteenth Street NW. between Park Road and Kennedy Street.....	Tarvia.....	544.35
4110	Various roads northwest section.....	Oil.....	579.50
4114	Various macadam streets, northwest section.....	do.....	607.25
4116	Georgia Avenue, from Rock Creek Church Road to District of Columbia line.....	do.....	1,272.38
4128	Warder Street, between Columbia Road and Kenyon Street.....	Repair.....	305.07
4133	Eleventh Street NW., between Florida Avenue and Park Road.....	do.....	1,606.94
4135	Linnean Hill Road, Twentieth Street and Klinge Road, and Adams Mill Road.....	Oil.....	616.12
4155	Chestnut Street, east of Cedar Street.....	Laying terra-cotta pipe.....	30.85
4167	Euclid Street, between Champlain and Columbia Road.....	Repair.....	61.44
4169	Twenty-third Street, between Wyoming Avenue and Kalorama Road.....	do.....	129.75
4191	Rock Creek Church Road, between Seventh and Warder Streets.....	do.....	217.00

## Repairs to suburban roads, appropriation 1913—Continued.

Job No.	Location.	Work.	Cost.
<b>SECTION 2.—Rock Creek to North Capitol Street and Riggs Road—Continued.</b>			
4197	Rock Creek Church Road, between Seventh Street and Riggs Road.	Repair.....	\$619.11
4206	Webster Street NW., east of Eighth Street.....	Regulate.....	93.25
4207	Keefer and Lamont Streets, between Georgia Avenue and Sixth Street.	Repair.....	102.00
4217	Princeton Street, between New Hampshire and Georgia Avenues.	.....do.....	111.50
4218	Hobart Place, east of Sherman Avenue.....	.....do.....	323.25
4226	West side Georgia Avenue, near Jefferson Street.....	Building trap.....	26.88
4240	Twentieth Street, between Kalorama Road and Ashmead Place.	Surface.....	49.62
4241	Euclid Street NW., between Sixteenth and Champlain Streets.	Repair.....	872.98
4253	Park Place NW., between Manor and Newton Streets.....	.....do.....	86.07
4290	Eighth Street NW., Florida Avenue to Euclid Street.....	.....do.....	53.75
4293	Harvard Street, between Fifteenth Street and sheet asphalt.	.....do.....	31.25
4187	W and Adams Streets, between North Capitol and First Streets.	.....do.....	92.25
4227	Fern Road, between Georgia Avenue and District line.....	.....do.....	163.25
4168	Cedar Street, from Blair Road to subway.....	Improve.....	1,909.80
4186	Cedar Street and Carroll Avenue, between Fourth Street and Maple Avenue.	Sewer laterals.....	370.27
4273	} Northwest section (oiling).....	Hauling sand.....	540.75
4275		Gravel.....	109.88
4189	Riggs Road, from Rock Creek Church Road to District of Columbia line.	Repair.....	20.75
4307	} Various streets.....	Oil.....	3,967.87
4302		Repair.....	136.50
4301	Nineteenth Street NW., between Kenyon and Kilbourne Streets.	.....do.....	34.15
4282	Repairs to motor cycle (Foreman King).....	.....do.....	37.05
4083	Repairs to motor cycle (Foreman Mullen).....	Tarvia B.....	704.37
4305	Sixteenth Street NW., between Columbia Road and Oak Street.		
			33,590.05
	Dangerous holes and minor repairs.....		11,691.03
			45,281.08
<b>SECTION 3.—North Capitol Street to Eastern Branch.</b>			
4000	Watering various roads.....		\$402.25
4014	Streets in Brookland.....	Repairs.....	1,383.50
4015	Streets in Ivy City.....	.....do.....	637.50
4016	Streets in Langdon.....	.....do.....	949.68
4018	North Capitol Street, between V Street and Michigan Avenue.	.....do.....	2,799.85
4022	Bladensburg Road, between end of asphalt and District line.	.....do.....	2,684.60
4027	Various roads, northeast section.....	Oiling.....	1,928.20
4030	Michigan Avenue, from North Capitol Street to District line.	Repairs.....	725.64
4031	Rhode Island Avenue, from North Capitol Street to South Dakota Avenue.	.....do.....	1,919.13
4032	Harewood Road.....	.....do.....	236.63
4033	Sargeant Road.....	.....do.....	12.75
4034	Lincoln Road.....	.....do.....	145.36
4035	Eastern Avenue.....	.....do.....	281.41
4036	Newton Street NE., east of Ninth Street.....	Repair.....	131.25
4102	Rosedale Street NE., between Sixteenth and Seventeenth Streets.	.....do.....	71.00
4104	Eighteenth Street, between Bennings Road and Rosedale Street; Gales Street, between Eighteenth and Nineteenth Streets; Rosedale Street, between Eighteenth and Nineteenth Streets.	Grade.....	427.93
4150	Newton Street NE., Fourteenth to Eighteenth Streets.	Repair.....	435.64
4211	Twenty-fifth Street NE., between Irving and Hamlin Streets.	.....do.....	73.00
4225	Quincy Street NE., between Thirteenth and Fourteenth Streets.	Gravel.....	472.80
4229	Lawrence Street NE., Seventeenth to Eighteenth Streets.	Grade.....	185.50
4240	Fifth Street NE., from U to V Streets.....	Shape roadway.....	22.42
4228	Randolph Street NE., between Twelfth and Thirteenth Streets.	Repair.....	116.99
4243	U Street, between Lincoln Road and Summit Place.....	Cinders.....	49.07
4190	Streets in High View.....	Repair.....	1,120.81
4136	Northeast section.....	Street crossings.....	86.87
4299	Montella Avenue NE., from Florida Avenue to Mount Olivet Street.	Repairs.....	166.25
4303	} Various streets.....	Oil.....	1,715.54
4083		Repairs to motorcycle.....	37.20
			19,961.42
	Dangerous holes and minor repairs.....		3,289.59
			23,251.01



## Repairs to suburban roads, appropriation 1913—Continued.

Job No.	Location.	Work.	Cost.
SECTION. 4.—East and south of the Eastern Branch.			
4000	Watering various roads.....		\$746.50
4011	Deane Avenue, between Forty-fifth and Forty-eighth Places.....	Shape roadway.....	15.75
4020	Nichols Avenue SE., between Sheridan and Alabama Avenues.....	Repair.....	2,957.11
4028	Intersection of Valley Street and Mount View.....	do.....	69.00
4029	Benning Road, from Oklahoma Avenue to bridge.....	Oil.....	741.65
4040	Fiftieth Street NE., between Washington and Grant Streets.....	Improve.....	45.25
4041	Fiftieth, St. Catharine, and Fifty-eighth Streets, and Eastern Avenue.....	Repair.....	233.50
4042	Forty-eighth Street NE., Deane Avenue to Fitch Place.....	Regulate.....	110.75
4068	Naylor Road, from Good Hope Road to District line.....	Gravel.....	451.64
4088	Benning Road NE., between end of asphalt and Anacostia Road.....	Repair.....	898.89
4219	Park Place SE.....	Gravel.....	109.63
4109	Benning, Sheriff Road, and Kenilworth.....	Oil.....	735.44
4112	Good Hope Road and Nichols Avenue SE.....	do.....	884.15
4142	Park Place SE.....	Repair.....	24.00
4143	Green Street SE.....	do.....	18.75
4152	Good Hope Road, Thirteenth and Fourteenth Streets, and Minnesota Avenue, Sixteenth, Seventeenth, Eighteenth Streets.....	Lay crossings.....	227.74
4172	Thirtieth Street SE., Pennsylvania Avenue to R Street.....	Gravel.....	283.12
4198	Division Avenue, between Gay and Hayes Streets.....	Grade and walks.....	283.50
4153	Various streets, Congress Heights.....	Repair.....	98.19
4283	Sheriff Road, Eastern Avenue and St. Catharine Street.....	do.....	149.95
4154	Streets in Anacostia.....	do.....	342.09
4156	Roads in Hillsdale.....	do.....	152.13
4165	Fitch Place NE., between Forty-eighth and Fiftieth Streets.....	Regulate.....	82.00
4171	Livingston Road.....	Gravel.....	32.50
4272	Southeast section.....	Hauling sand.....	106.37
4281	Burns Street SE., east of Minnesota Avenue.....	Gravel.....	45.00
4083	Repairs to motor cycle.....		26.70
4300	Various streets.....	Oil.....	1,680.87
			11,552.17
	Dangerous holes and minor repairs.....		7,476.13
			19,028.30

## RECAPITULATION.

Section 1.....	\$30,465.60
Section 2.....	45,281.08
Section 3.....	23,251.01
Section 4.....	19,028.30
Tools, etc.....	118,025.99
Portland cement.....	578.32
Pipe, etc.....	41.70
Concrete sand.....	270.22
Lumber, etc.....	460.25
Repairs to instruments.....	190.80
Repairs to water wagons, street and road scrapers.....	8.00
Engine oil.....	927.34
Cylinder oil.....	28.08
Motor cycles (purchases).....	90.88
Gasoline.....	756.20
Kerosene.....	28.74
Photo plates.....	86.90
Ice.....	28.78
Blacksmith work.....	72.64
Hauling.....	367.68
Stone and freight.....	8,432.38
Travelling expenses.....	3,550.00
Street car tickets.....	21.55
Coal.....	10.00
Paint, etc.....	1,264.40
Repairs to motor cycles.....	8.17
Moving electric poles.....	34.80
Moving glass lamps.....	60.00
Raising water boxes, etc., to grade.....	6.00
Printing proposals.....	261.46
Cobblestone.....	9.36
Flint stone.....	152.63
Gravel.....	162.40
Fittings, etc.....	121.65
Limestone.....	31.33
Switching.....	1,697.22
	4.00

Demurrage.....	\$69.00
Cotton waste.....	45.80
Blue printing.....	10.23
Harness.....	40.00
Repairs to steam rollers.....	917.83
Horseshoes and nails.....	44.18
Wood.....	1.84
Miscellaneous.....	705.35
Balance.....	375.80
	140,000.00

Respectfully submitted.

L. R. GRABILL,  
*Superintendent of Suburban Roads.*

The ENGINEER OF HIGHWAYS.

## REPORT OF THE ENGINEER OF BRIDGES.

WASHINGTON, D. C., *September 1, 1913.*

SIR: I have the honor to submit the following report of the operations under my charge for the fiscal year ended June 30, 1913:

The expenditures under the construction and repair of bridges were as follows:

Bridge No.	Character of work.	Cost.
87	Monroe Street, between Seventeenth and Eighteenth Streets (construct bridge)....	\$273.66
55	Painting Anacostia Bridge.....	1,645.74
7	Refloor portion of Aqueduct Bridge.....	5,155.32
30	Paint (Calvert Street Bridge).....	1,139.80
	Cedar Street Bridge (construction of steps).....	371.90
27	Refloor (Klingie Road and Connecticut Avenue).....	3,439.78
	Lamp pedestals at north approach to Connecticut Avenue Bridge.....	161.70
27	Paint.....	640.54
	Dangerous holes and minor repairs:	
	July 1 to 15, 1912.....	62.60
	July 16 to 30, 1912.....	224.75
	July 1, 1912, to June 30, 1913.....	46.69
	July 1, 1912, to June 30, 1913.....	8.02
	Aug. 1 to 15, 1912.....	293.33
	Aug. 16 to 31, 1912.....	39.80
	Sept. 1 to 15, 1912.....	43.30
	Sept. 16 to 30, 1912.....	46.12
	Oct. 1 to 15, 1912.....	46.25
	Oct. 16 to 31, 1912.....	9.75
	Nov. 1 to 15, 1912.....	6.50
	Nov. 16 to 30, 1912.....	17.75
	Dec. 1 to 15, 1912.....	9.95
	Dec. 16 to 31, 1912.....	21.48
	Jan. 1 to 15, 1913.....	8.17
	Jan. 16 to 31, 1913.....	3.80
	Feb. 1 to 15, 1913.....	28.70
	Mar. 16 to 31, 1913.....	57.47
	Apr. 1 to 15, 1913.....	84.02
	Apr. 16 to 30, 1913.....	89.16
	May 1 to 15, 1913.....	240.86
	May 16 to 31, 1913.....	34.11
	June 1 to 15, 1913.....	6.66
	June 16 to 30, 1913.....	.....
	Paint and brushes.....	848.88
	Lumber.....	1,125.13
	Cement, sand, and gravel.....	114.00
	Nails.....	44.93
	Photograph work.....	11.55
	Tools.....	47.70
	Coal.....	17.45
	Car tickets.....	20.00
	Forage.....	106.23
	Livery (inspector).....	240.00
	Salaries, Engineer of bridges' office.....	2,184.14
	Miscellaneous.....	212.80
	Hand railing (Cedar Street Bridge).....	52.78
	Abutments for Dean Avenue Bridge:	
	Excavation, 468 cubic yards, at \$0.40.....	\$187.20
	Concrete, 105.33 cubic yards, at \$6.....	631.98
		\$819.18
	Extra order No. 1.....	22.94
	Extra order No. 2.....	42.06
	Inspection.....	66.00
		950.18

Bridge No.	Character of work.	Cost.
	Abutments for Grant Street Bridge:	
	Excavation, 659.4 cubic yards, at \$0.40.....	\$263.76
	Concrete, 92.45 cubic yards, at \$6.....	554.70
		\$818.46
	Extra order No. 2.....	42.06
	Inspection.....	66.00
		\$926.52
	Total expended.....	21,159.97
	Appropriation, "Construction and repair bridges, 1913".....	23,000.00
	Amount expended to date.....	21,159.97
	Balance.....	1,840.03
	Total.....	23,000.00

The Cedar Street subway was completed December 12, 1912, under contracts with the Baltimore & Ohio Railroad Co., the Cranford Paving Co., and George B. Mullen, the aggregate payments amounting to \$43,184.09.

The Belmont Street retaining wall, steps, and balustrade was completed under contract with Lake and Bright, September 7, 1912, the cost of the work being \$2,824.41.

The abutments and piers for two small bridges over Watts Branch in Deanwood were completed under contract with Charles H. Tompkins, July 24, 1913. Bridge on Grant Street cost \$926.52; bridge on Dean Avenue cost \$950.18.

Proposals for the construction of Q Street Bridge were received from four bidders on June 24, 1913, and the lowest bid being in excess of the available fund all were rejected, and work of the revision of the plans was begun and prosecuted during the remaining portion of the fiscal year. The plans for the bridge to be constructed on Pennsylvania Avenue crossing Rock Creek were begun and it is expected that this work will be ready for advertisement during the present autumn.

The sundry civil bill for 1911-12 made an appropriation for the construction of a rock face or boulder bridge across Rock Creek in the Zoological Park of \$20,000 and provided that "Hereafter all plans and specifications for the construction of buildings in the Zoological Park shall be prepared under the supervision of the municipal architect of the District of Columbia, and all plans and specifications for bridges in said park shall be prepared under the supervision of the engineer of bridges of the District of Columbia."

Plans and specifications for a reenforced concrete bridge of 80-foot span were prepared as stipulated above, and the bridge is now being constructed under the supervision of the Zoological Park authorities.

A dispute has arisen with the railway authorities concerning the responsibility for maintenance of certain bridges constructed under the acts providing for the elimination of grade crossings. Two of these, viz, the T Street Bridge and the New York Avenue Bridge, should be painted, and portions of the protecting concrete envelopes should be replaced. If it shall be decided that the District of Columbia is responsible for this work, additional funds should be provided. I would suggest that \$5,000 be allotted therefor.

The Secretary of War has requested that a draw span be placed in the bridge crossing Anacostia River in the line of Pennsylvania Avenue SE., for which an appropriation of \$60,000 is requested.

I respectfully recommend that an effort be made to secure an increase in the appropriation for construction and repair of bridges of \$5,000 over and above the amount of the current appropriation. The increased cost of lumber for flooring and of labor, as well as the necessity for the reconstruction of many of the smaller road bridges to meet the requirements incidental to the growing use of heavy motor trucks, make necessary a larger appropriation than heretofore granted for this purpose.

Very respectfully,

D. E. McComb,  
Engineer of Bridges.

To the ENGINEER OF HIGHWAYS.



TABLE E.—Statement of work on "streets and avenues" and "suburban streets" for year ended June 30, 1913.

STREETS AND AVENUES.

Street.	From—	To—	Section.	Kind of pavement.	Contract work.										Material.				Cost of material.	Cost of extra work and day labor.	Amount of contract.	Total cost of street.	Contractor.				
					Square yards.	Length.	Contract No.	Price per square yard.	Ordinary grading.	Macadam grading.	Old cobble and granite removed.	Old curb removed.	Curb set.	Curb reset.	Vitrified block gutters.	Vitrified block.	8 by 8 inch curb.	6 by 20 inch curb.						Circular curb.			
						<i>Feet.</i>			<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Sq. yds.</i>	<i>Linear ft.</i>	<i>Linear ft.</i>	<i>Linear ft.</i>	<i>Sq. yds.</i>	<i>Number.</i>	<i>Linear ft.</i>	<i>Linear ft.</i>	<i>Linear ft.</i>								
Alley, square 1043	E.	G.	Southeast	Vitrified block	1 955.00																						
E.	Sixteenth	Seventeenth	do	Asphalt	1 624.38	430	5171	\$1.77	260.00		190.00	720.00	800.39		141.41	6,100	768.44		34.54	\$851.85	\$1,084.24	\$3,589.32	\$1,936.09	Day labor.			
Florida Avenue	Eighteenth	Nineteenth	Northwest	do	3 932.82		5171	1.77	238.21											705.70	24.00	1,933.25	4,319.02	Cranford Paving Co.			
Do.	U	V	do	Bituminous concrete	3 124.03	826	5171	1.67	525.03	1,000.00	268.50	1,603.65	1,638.69	73.42	290.12	12,660	1,522.18		107.06			1,933.25	Do.				
Do.	Sixteenth	V	do	Asphalt	212.72																	1,933.25	Do.				
G.	Pennsylvania Avenue	Fourteenth	Southeast	Bituminous concrete	3 366.47	812	5171	1.67	752.05		396.70	889.00	869.24	332.45	256.43	12,660	1,522.18		107.06	1,530.83	12.00	8,296.31	9,839.14	Do.			
K.	Fourth	Fifth	Northeast	Asphalt	2 280.05	560	5171	1.77	597.00		449.00			332.45	256.43	11,130	792.71		131.86	953.20	8.00	7,661.89	8,623.09	Do.			
Pennsylvania Avenue	Thirteenth	Fourteenth	Southeast	do	1 503.93	379	5171	1.77	627.00		460.00	580.00	665.25	141.17	119.25	10,600				224.19	36.00	5,324.68	5,584.87	Do.			
Robinson	L	M	Southwest	do	3 586.90	1,040	5171	1.77	960.00		227.00	225.00	231.57	1,425.21	197.38	8,430	604.74		9.42	572.67	4.00	3,816.38	4,393.05	Do.			
Vermont Avenue	V	Florida Avenue	Northwest	Bituminous concrete	821.63	335	5171	1.67	273.14		145.13	21.17	212.66	438.36	129.13	5,550		265.78	71.37	493.34	52.00	7,720.21	8,296.55	Do.			
Virginia Avenue	B	Eighteenth	do	Asphalt	2 444.69	624	5171	1.77	880.00		744.03	945.00	976.59	156.82	210.64	9,080	175.77		37.68	288.27	32.00	2,101.69	2,421.96	Do.			
B	Seventeenth	Virginia Avenue	do	do	2 893.50	791	5171	1.77	132.72	605.00	88.80	320.32	357.57	23.50	74.19	9,080	909.46		81.58	963.99	86.00	6,492.10	7,542.09	Do.			
Second	I	K	Southwest	do																				Do.			
Eighth	H		do	do	798.10	248	5171	1.77	244.00		220.78	16.60	505.40	6.20	86.26	3,300	300.58		60.51	358.12	16.00	5,988.94	6,363.06	Do.			
Thirteenth	N	North Carolina Avenue	Northeast	do	1 509.08	776	5171	1.77	388.00		360.00			3.70	286.21	3,680		506.00		528.17	16.00	1,859.56	2,403.73	Do.			
Twenty-seventh	N	Dumbarton	do	do	1 443.96	405	5171	1.77	421.00		293.00			764.00	147.66	12,383				262.15	52.00	3,466.65	3,780.80	Do.			
Asphalt			Georgetown	do	948.44	302	5171	1.77	221.00		245.00			575.49	97.53	4,200				133.25	16.00	3,459.09	3,608.34	Do.			
Bituminous concrete																				88.83	16.00	2,243.27	2,348.10	Do.			
					20,198.57	6,396			6,511.15	1,605.00	4,087.94	5,323.74	6,257.36	5,195.94	2,282.46	48,328	5,073.88	771.78	534.02	7,954.56	1,454.24	63,953.34	73,362.14				
					7,312.13	1,973																					
					27,510.70	8,369																					

TABLE E.—Statement of work on "streets and avenues" and "suburban streets" for year ended June 30, 1913—Continued.

## CONSTRUCTION OF SUBURBAN STREETS AND ROADS.

Street.	From—	To—	Section.	Kind of improvement.	Square yards.	Length.	No. of contract.	Contract work.					Material.				Cost of material.	Cost of extra work and day labor.	Amount of contract.	Total cost.	Contractor.		
								Price per square yard.	Grading.	Old cobble removed.	Curb set.	Curb re-set.	Gutters.	Vitrified block.	8 by 8 inch curb.	6 by 20 inch curb.						Circular curb.	
Belmont.....	Thirteenth.....	Fourteenth.....	Northwest.....	Asphalt block.....	1,894.12	561	5234	\$1.76	<i>Cu. yards.</i> 885.47	<i>Sq. yards.</i>	<i>Lin. feet.</i> 1,188.73	<i>Lin. feet.</i> 43.40	<i>Sq. yards.</i>	<i>Number.</i>	<i>Lin. feet.</i> 1,036.67	<i>Lin. feet.</i> 67.50		\$854.70	\$2.37	\$4,200.98	\$5,058.05	Washington Asphalt Block & Tile Co.	
Irving.....	Eleventh.....	Thirteenth.....	do.....	do.....	1,877.55	562	5234	1.76		467.00	409.83	777.86	4.55	200	409.28			315.28		4,197.06	4,512.34	Do.	
Fairmont.....	do.....	do.....	do.....	do.....	2,363.61	705	5234	1.76		508.00	466.00	70.00	1,421.08	5.67	175			25.61		5,187.10	5,187.10	Do.	
Fourteenth.....	Newton.....	Jackson.....	Northeast.....	Grading.....			5236		4,428.00									62.42		1,904.04	1,906.46	G. B. Mullin.	
Thirty-fourth.....	Macomb.....	Newark.....	Northwest.....	do.....			5236	.34	4,978.00									637.38		1,692.57	2,329.95	Do.	
Columbia Road.....	Georgia Avenue.....	Park Place.....	do.....	Cement concrete.....	4,307.98	1,271	5246	.84	1,140.00	59.00	2,057.79	1,109.89	18.81	46.85	2,040	1,996.89	73.30	1,633.36	37.01	848.39	6,879.82	Cranford Paving Co.	
Ninth.....	Kansas Avenue.....	Allison.....	do.....	do.....	2,314.21	748	5246	.84	594.00	18.65	849.43	518.79	44.44	1,991	634.47	171.17	57.84	734.95	35.11	2,721.29	3,491.35	Do.	
Allison.....	Georgia Avenue.....	Ninth.....	do.....	do.....	1,133.50	320	5246	.84	358.00	159.50	596.96	6.90	39.27		549.44		51.81	506.29	31.02	226.52	1,940.54	Do.	
Jefferson.....	do.....	do.....	do.....	Macadam.....	1,620.00	540	5251		350.00	48.00	104.10		111.40					7.02	58.38	997.87	1,063.27	Harper & Voigt.	
Thirty-fourth Place.....	Newark.....	Ordway.....	do.....	do.....	1,332.00	571	5251		656.00	38.00	1,963.12		963.12										
Raleigh Place.....	Waclark Place.....	Nichols Avenue.....	Southeast.....	do.....	1,650.00	675	5251		1,730.00		8.00		2,117.33					6.58	208.75	1,207.68	1,423.01	Do.	
Brothers Place.....	Highview.....	Esther Place.....	do.....	do.....	2,750.00	1,375	5251		2,950.00		21.00		860.30					31.12	87.28	1,379.56	1,497.96	Do.	
Twentieth.....	Rhode Island Avenue.....	Jackson.....	Northeast.....	do.....	960.00	350	5251		133.00				305.18					81.60	2,134.88	2,216.48	Do.		
Thirty-sixth.....	Macomb.....	Newark.....	Northwest.....	do.....	1,088.00	384	5251		111.00	381.00	790.47		30.00					89.06	223.71	360.57	Do.		
Bruce Place.....	do.....	do.....	Southeast.....	do.....									197.61	8,650	754.48		28.26	784.33	46.90	586.16	1,417.39	Do.	
Seventh.....	Taylor.....	Upshur.....	Northwest.....	Cement concrete.....	1,417.78	395	5246	.84	217.00	12.48	72.57		11.76	454		72.57	81.65	96.83	1,741.39	1,919.87	1,919.87	Cranford Paving Co.	
Jackson.....	Seventeenth.....	Sheridan.....	Northwest.....	do.....	1,000.00	400	5251		200.00	528.60	1,656.22									259.05	259.05	Harper & Voigt.	
Ninth.....	do.....	do.....	do.....	do.....	2,454.00	880	5251		749.00	20.00	235.75		250.32										
Twenty-second.....	Minnesota Avenue.....	Railroad Avenue.....	Southeast.....	do.....	2,445.00	1,000	5251		2,118.00		11,508.83		1,508.83					84.43	1,886.59	1,971.02	1,971.02	Do.	
Upshur.....	Georgia Avenue.....	Eight.....	Northwest.....	Cement concrete.....	1,699.55	608	5246		363.00	145.33	163.83	6.50	13.63	538				10.53	349.48	1,362.52	1,722.53	Do.	
Kearney.....	Tenth.....	Twelfth.....	Northwest.....	do.....	2,445.00	1,000	5251		2,118.00		11,508.83		1,508.83					10.53	349.48	1,362.52	1,722.53	Do.	
Minnesota Avenue.....	Pennsylvania Avenue.....	Twenty-eighth.....	Southeast.....	Gravel.....	1,275.00	425	5251		403.00		825.40		825.40					174.98	428.43	1,703.27	2,306.68	Cranford Paving Co.	
Jackson.....	Tenth.....	Twelfth.....	Southeast.....	do.....	2,410.00	766	5251		2,293.00		70.02	44.11	651.07					143.00	680.95	823.95	823.95	Harper & Voigt.	
Thirteenth.....	Jackson.....	Kearney.....	Northeast.....	Macadam.....	1,332.00	345	5251		7,010.00		1,641.45	9.46	736.10					10.53	40.94	1,612.33	1,663.80	Do.	
Fessenden.....	Wisconsin Avenue.....	River Road.....	Northwest.....	do.....			5257												40.49	1,079.56	1,120.05	Do.	
Tilden.....	End of Asphalt.....	Rock Creek Park.....	do.....	do.....	4,200.00	2,100	5314		21,692.00										365.22	1,619.20	1,984.42	G. B. Mullin.	
Monroe.....	Fifteenth.....	Seventeenth.....	Northwest.....	do.....			5257		168.00										80.50	696.25	776.75	Harper & Voigt.	
Twenty-third and R.....	Twenty-second.....	Naylor Road.....	Southeast.....	Grading.....	2,220.00	900	5251		2,617.00					1,694.35					279.00	9,436.02	10,467.12	G. B. Mullin.	
Hunt Place.....	Deane Avenue and Grant.....	do.....	do.....	do.....			5251		30.00														
Hamlin.....	Rhode Island Avenue.....	Twentieth.....	Northeast.....	do.....			5251		9,997.00														
Eighteenth.....	Newton.....	Irving.....	do.....	Macadam.....	1,516.00	620	5322		10,576.00														
Seventeenth.....	Hamlin.....	do.....	do.....	do.....	4,522.00	1,850	5251		296.00														
Jackson.....	do.....	do.....	do.....	do.....			5251		526.00														
Quarry Road.....	Twenty-first.....	Rhode Island Avenue.....	do.....	do.....	1,100.00	450	5251		8,750.00					545.81					64.97	4,124.64	4,189.61	Martin Dodge.	
Harvard.....	Entrance to Zoological Park.....	Twenty-second.....	do.....	do.....	1,360.00	557	5251		1,172.00					1,695.60					38.26	425.14	463.40	Harper & Voigt.	
Cedar Street subway, Takoma Park.....	Avenue of Presidents.....	Columbia Road.....	Northwest.....	Grading.....			5134		75,388.00					502.80									
	do.....	do.....	do.....	Asphalt.....	601.06	180	5343		470.36		159.38	220.66	98.38	4,000									
	do.....	do.....	do.....	Cement concrete.....	2,223.25	500	5246	.84	771.43		198.75	6.96	727.95	1,508				160.18	248.18	2,049.57	17,263.85	19,313.42	Harper & Voigt.
	do.....	do.....	do.....	do.....																			
	do.....	do.....	do.....	Asphalt.....	601.06	180																	
	do.....	do.....	do.....	Asphalt block.....	6,135.28	1,828																	
	do.....	do.....	do.....	Cement concrete.....	13,066.27	3,442																	
	do.....	do.....	do.....	Macadam.....	35,234.95	14,188																	
Total.....					55,036.56	19,628					163,923.90	3,196.00	13,868.57	3,074.53	11,280.19	19,556	5,381.23	171.17	846.72	6,486.83	8,471.95	92,504.65	107,463.43

Broken stone for macadam furnished from District quarry; freight, hauling, and spreading, and rolling by day labor shown in Table M.  
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1 Cement curb.

2 Linear feet.

3 Cobble.

4 Vitrified block.

5 Cement.

6 Cement; linear feet shown in square yards.



TABLE F.—Repairs to asphalt pavements under contract with Cranford Paving Co., No. 4794, for year ending June 30, 1913.

Street.	From—	To—	Section.	Repairs to asphalt.							New gutters.					Curb work.					Total cost of street.	Date repairs completed.					
				New pavement.	Surface.	Base.	Binder.	Old pavement removed.	Grading.	Total cost of repairs.	Vitrified block gutters.	Grading and removal of material.	Number of blocks.	Cost of blocks.	Total cost of gutters.	Old curb removed.	Curb set.	Curb reset.	Cost of curb.	Total cost curb work.							
First.....	Douglas.....	Michigan Avenue.....	Northwest.....	Sq. yds. 3,713.39	Sq. yds.	Cu. yds. 335.00	Cubic feet.	Cubic yds. 3,557.00	Cu. yds.	5,735.60	Sq. yds. 335.00	Cu. yds. 164.00	14,750	\$311.96	\$587.21	Linear feet.	Linear feet.	Linear feet. 2,069.33		\$361.96	\$6,734.77	Oct. 24, 1912	Asph				
Third.....	R.....	T.....	Northwest.....	3,242.88		17.41		673.65	80.16	6,509.06	340.80		14,650	309.85	751.04	239.20	232.15	2,037.50	\$257.70	938.76	8,198.86	June 11, 1913	Asph				
Fourth.....	S.....	T.....	Northwest.....	1,999.62	283.11	39.00		387.00	91.00	4,334.86	129.63		5,570	117.81	323.78	72.00	69.10	953.00	76.78	373.30	5,031.94	June 10, 1913	Asph				
Fourth (west side).....	T.....	V.....	Northwest.....	786.13		6.70		115.00	94.00	1,631.46	97.82		4,160	87.98	236.70	19.00	28.95	537.27	34.69	202.78	2,090.94	Apr. 15, 1913	Asph				
Sixth.....	New York Avenue.....	L.....	Northwest.....	505.26				155.00		1,123.19	47.74		30.00	2,100	44.42	122.98			139.25	42.64	1,288.81	Apr. 13, 1913	Asph				
Eighth.....	S.....	Florida Avenue.....	Northwest.....	2,852.19	82.24	12.20	129.20	717.00	25.00	6,142.43	359.61		15,700	332.06	934.19	200.00	302.63	1,519.49	107.60	751.84	7,828.46	Apr. 19, 1913	Coal				
Ninth (west side).....	F.....	G.....	Northwest.....	501.27				120.00	5.00	1,195.90	49.48		18.00	45.05	137.32	215.00	214.95		164.65	262.28	1,595.50	Nov. 25, 1912	Coal				
Tenth.....	K.....	Massachusetts Avenue.....	Northwest.....		2,866.82		5,061.60	260.00		4,335.68	317.34		14,470	306.04	925.19	1,358.00	1,336.01	15.35	1,049.62	1,674.67	6,925.54	Oct. 4, 1912	Asph				
Fifteenth.....	N.....	Dupont Circle.....	Northwest.....	379.49	4,572.72	158.00	7,341.00	412.00	68.00	5,206.72	497.98		23,500	497.03	1,306.56	69.00	672.48	409.62	539.26	957.60	7,560.88	Dec. 13, 1912	Coal				
Nineteenth.....	N.....	Massachusetts Avenue.....	Northwest.....	953.13	1,841.58	61.63	2,766.40	134.00	25.00	2,498.26	223.88		9,755	206.22	585.55	253.00	342.85	128.37	188.36	305.99	3,399.80	Aug. 7, 1912	Coal				
Do.....	Pennsylvania Avenue.....	H.....	Northwest and Southeast.....	2,526.14	10,198.85	283.00	13,458.70	1,576.00	100.00	23,894.22	1,103.09		47,228	1,028.20	3,055.29	250.00	541.61	7,434.13	531.17	2,597.88	29,547.39	July 26, 1913	Asph				
East Capitol.....	First.....	Eleventh.....	Northwest and Southeast.....	2,526.14	10,198.85	283.00	13,458.70	1,576.00	100.00	23,894.22	1,103.09		47,228	1,028.20	3,055.29	250.00	541.61	7,434.13	531.17	2,597.88	29,547.39	July 26, 1913	Asph				
G.....	Tenth.....	Twelfth.....	Northwest.....	1,560.50	29.73		45.90	412.00		3,870.13	168.54		30.00	7,200	152.28	424.92	202.25	202.25	174.02	222.62	418.74	4,713.79	Sept. 3, 1912	Coal			
G (south side).....	Seventh.....	Ninth.....	Northwest.....																								
Kalorama.....	Twentieth.....	Connecticut Avenue.....	Northwest.....	440.54	.90		1.38		8.50	1,175.92	74.40		3,250	68.74	165.83				610.55	219.59	1,561.34	Nov. 14, 1912	Asph				
Marion.....	P.....	Q.....	Northwest.....	1,521.32	153.39		182.00	166.00		3,152.52	166.44		39.00	7,250	153.34	418.85			297.52	531.20	960.42	4,531.79	July 24, 1912	Asph			
M.....	Eighteenth.....	Twenty-first.....	Northwest.....	1,265.96	30.45	10.60	68.40	242.50	40.00	2,904.90	185.98		25.00	8,100	171.32	449.80			531.21	648.30	420.15	338.13	3,592.83	May 3, 1913	Asph		
Massachusetts Avenue.....	Tenth.....	Twelfth.....	Northwest.....	454.28	5,720.22	244.40	7,835.00	537.00		8,790.81	552.37		175.06	23,900	505.49	1,475.95			528.00	531.21	1,025.26	58.72	11,002.67	Dec. 13, 1912	Asph		
New Hampshire Avenue.....	Twelfth.....		Northwest.....	448.43	3,785.23	193.12	5,879.46	656.00		7,492.10	269.83		93.00	11,770	248.94	798.66			1,180.93	943.68	1,480.00	9,776.76	Nov. 19, 1912	Asph			
New Jersey Avenue.....	Massachusetts Avenue.....	H.....	Northwest.....	2,967.87	34.06		52.00	586.00		5,959.30	161.30		77.00	10,100	213.62	550.19			12.17	1,072.74	17.10	347.52	6,873.01	May 20, 1913	Asph		
Do.....	Massachusetts Avenue.....	H.....	Northwest.....	290.65	1,329.49	69.00		234.00	37.00	2,736.72			40.00	6,900	145.94	380.58			67.00	54.00	393.63	56.13	289.20	3,406.50	May 20, 1913	Asph	
New York Avenue.....	Fifth.....	Seventh.....	Northwest.....	4,868.12	183.53	22.50	243.80	924.00	420.00	11,139.15	371.76		123.00	16,232	343.31	1,046.90			267.00	312.80	1,530.74	123.52	841.24	13,047.29	May 3, 1913	Asph	
O.....	Tenth.....	Eleventh.....	Northwest.....																								
Pennsylvania Avenue.....	Twenty-first.....	Twenty-second.....	Northwest.....	823.68	10.29		14.20	185.53	40.00	1,904.11	97.40		32.47	4,250	89.89	295.94			480.00	480.31	26.31	371.85	590.88	2,790.93	Apr. 19, 1913	Coal	
Pennsylvania Avenue (south side).....	Nineteenth.....	Twenty-first.....	Northwest.....	4,261.42	104.66		231.60	1,054.00	120.09	10,282.45	224.53		75.00	9,680	204.73	679.90			1,227.00	1,262.34	173.35	994.09	1,621.75	12,584.10	Aug. 21, 1912	Coal	
Do.....	Nineteenth.....	Twenty-first.....	Northwest.....	4,135.08	152.00		273.60	1,020.00	50.00	11,033.44	219.75		70.00	8,300	175.55	477.95			397.00	423.49	222.23	344.90	812.94	12,314.23	Aug. 7, 1912	Coal	
Pennsylvania Avenue.....	Third.....	Sixth.....	Northwest.....																								
R.....	Eckington Place.....	Third.....	Northwest.....	1,563.89	16,873.23	1,956.40	26,277.20	180.00	185.00	34,208.53	733.72		235.00	31,530	666.86	1,666.87			3,038.06	3,046.68	329.66	2,377.81	4,542.48	40,417.88	Nov. 16, 1912	Asph	
S.....	Third.....	Fourth.....	Northwest.....	1,368.96		12.20		262.00	5.30	2,933.71	158.21		57.00	6,800	143.82	1,666.87			9.00	9.41	1,293.25	10.42	384.00	3,688.00	June 11, 1913	Asph	
Seaton.....	Do.....	Do.....	Northwest.....	1,188.08		6.11		260.00	2.70	2,638.73	94.65		33.00	4,100	86.72	249.74					732.54		201.98	3,090.45	.....	.....	.....
Do.....	Do.....	Do.....	Northwest.....	1,188.08		6.11		226.00	8.60	2,390.09	92.12		30.00	3,960	83.75	239.51					732.54		201.98	3,090.45	.....	.....	.....
Do.....	Do.....	Do.....	Northwest.....	844.68		4.60		156.00	39.00	1,734.26	95.52		33.00	4,160	87.98	260.01					792.63		225.46	2,219.73	June 3, 1913	.....	.....
Total.....				45,462.36	50,440.81	3,437.81	70,132.34	12,938.68	1,606.76	179,381.11	7,470.45	2,113.47	324,505	6,892.66	19,065.65	10,599.51	12,239.19	25,423.68	9,689.45	23,151.52	221,598.28						

<sup>1</sup> Original pavements laid at private expense.

\* \$12,134.52 paid from 1914 appropriation.

#### MINOR REPAIRS.

#### Work under contract 4794:

14,667 cubic feet asphalt surface, at 57 cents.....	\$8,360.19
12,014.50 cubic feet binder, at 43 cents.....	5,166.23
25,184 cubic feet surface, burner method, at 66 cents.....	16,621.44
182.40 cubic feet binder, at 28 cents.....	51.07
<b>Work by municipal plant:</b>	
7,214.23 cubic feet asphalt surface mixture, at \$0.487.....	\$3,498.93
5,752.81 cubic feet binder mixture, at \$0.401.....	2,306.88
32,079.14 cubic feet old material mixture, at \$0.3363.....	10,788.21
19,263 cubic feet bituminous concrete mixture, at \$0.444.....	8,597.56
2,760 cubic feet surfacing, Kirby Street, at \$0.4448.....	1,227.60
<b>Total.....</b>	<b>56,632.51</b>
	<b>221,598.28</b>

Total.....

<sup>1</sup> Includes \$171.60 charged to railroad companies.

Contract with Cranford Paving Co., No. 4794, for year ending June 30, 1913.

New gutters.					Curb work.					Total cost of street.	Date repairs completed.	Original pavement.			
Vitrified block gutters.	Grading and removal of material.	Number of blocks.	Cost of blocks.	Total cost of gutters.	Old curb removed	Curb set.	Curb reset.	Cost of curb.	Total cost curb work.			Character of pavement.	Year laid.	Year resur-faced.	Contractor.
Sq. yds.	Cu. yds.				Linear feet.	Linear feet.	Linear feet.								
335.00	164.00	14,750	\$311.96	\$587.21			2,069.33		\$361.96	\$6,734.77	Oct. 24, 1912	Asphalt, 4-inch base, laid at cost of property. <sup>1</sup>	1893		Cranford Paving Co.
340.60		14,650	309.85	751.04	239.20	232.15	2,037.50	\$257.70	938.76	8,198.86	June 11, 1913	Asphalt, bituminous base <sup>1</sup>	1889		Do.
129.63	68.10	5,570	117.81	323.78	72.00	69.10	953.00	76.78	373.30	3,031.94	June 10, 1913	do. <sup>1</sup>	1889		Do.
97.82	41.00	4,160	87.98	236.70	19.00	28.95	337.27	34.69	202.78	2,090.94	Apr. 15, 1913	do. <sup>1</sup>	1889		Do.
47.74	30.00	2,100	44.42	122.98			139.25		42.64	1,288.81	Apr. 13, 1913	Asphalt, hydraulic base.	1880		J. S. Baldwin.
359.61	120.00	15,700	332.06	934.19	200.00	302.63	1,519.49	107.60	751.84	7,828.46	Apr. 19, 1913	Coal-tar distillate.	1889		Barber Asphalt Paving Co.
49.48	18.00	2,130	45.05	137.32	215.00	214.95		164.65	262.28	1,595.50	Nov. 25, 1912	Coal tar	1872	1883	Thomas Lewis.
317.34	80.00	14,470	306.04	925.19	1,358.00	1,336.01	15.35	1,049.62	1,674.67	6,925.54	Nov. 16, 1912	Asphalt, hydraulic base.	1880		J. S. Baldwin.
497.98	132.00	23,500	497.03	1,306.56	69.00	672.48		539.26	957.60	7,560.88	Oct. 4, 1912	do.	1881		Cranford & Filbert.
223.88	18.00	9,755	206.32	595.55	253.00	236.00		188.36	305.99	3,399.80	Dec. 13, 1912	do.	1881		A. L. Barber.
68.53		3,010	63.66	152.75	337.00	342.85		128.37	267.43	450.80	Aug. 7, 1912	Coal tar	1873	1875	C. E. Evans.
1,103.09	275.00	47,228	1,028.20	3,055.29	250.00	541.61	7,434.13	531.17	2,597.88	29,547.39	July 26, 1913	Asphalt, hydraulic base.	1879	1889	W. C. Murdock.
108.54	30.00	7,200	152.28	424.92	202.25	202.25	174.02	222.62	418.74	4,713.79	Sept. 3, 1912	Coal tar	1872	1896	Barber Asphalt Paving Co.
74.40		3,250	68.74	165.83			610.55		219.59	1,561.34	Nov. 14, 1912	do.	1872	1883	Abbot Paving Co.
106.44	39.00	7,250	153.34	418.85	684.00	692.82	297.52	531.20	960.42	4,531.79	July 24, 1912	Asphalt, bituminous base <sup>1</sup>	1889		L. Clephane.
185.98	25.00	8,100	171.32	449.80	124.00	53.45	1,025.26	58.72	338.13	3,592.83	May 3, 1913	do.	1889		H. L. Cranford.
552.37	175.00	23,900	505.49	1,475.95	528.00	531.21	648.30	420.15	765.91	11,002.67	Dec. 13, 1912	Asphalt, hydraulic base.	1879		Barber Asphalt Paving Co.
209.83	93.00	11,770	248.94	550.19	798.66	1,180.93	110.18	943.68	1,486.00	9,776.76	Nov. 19, 1912	do.	1880		J. S. Baldwin.
233.23	77.00	10,100	213.62	550.19		12.17	1,072.74	17.10	347.52	6,873.01	Aug. 12, 1912	Asphalt, bituminous base.	1890		Do.
161.30	40.00	6,900	145.94	380.58	67.00	54.00	393.63	56.13	289.20	3,406.50	May 20, 1913	Asphalt, hydraulic base.	1882		Cranford Paving Co.
371.76	123.00	16,232	343.31	1,046.90	267.00	312.80	1,530.74	123.52	841.24	13,047.29	May 3, 1913	Asphalt, bituminous base.	1889		Barber Asphalt Paving Co.
97.40	32.47	4,250	89.89	295.94	480.00	480.31	26.31	371.85	590.88	2,790.93	Apr. 19, 1913	Coal tar	1875	1881	Cranford Paving Co.
224.53	75.00	9,680	204.73	679.90	1,227.00	1,262.34	173.35	994.09	1,621.75	12,584.10	Aug. 21, 1912	Coal-tar distillate.	1888		J. W. Vandenberg.
219.75	70.00	8,300	175.55	477.95	397.00	423.49	222.23	344.90	812.84	12,314.23	Aug. 7, 1912	do.	1888		H. L. Cranford.
733.72	235.00	31,530	666.86	1,666.87	3,038.06	3,046.68	329.66	2,377.81	4,542.48	40,417.88	Nov. 16, 1912	Asphalt, hydraulic base.	1877	1890	Neuchatel-rock Paving Co.
158.21	57.00	6,800	143.82	349.49	9.00	9.41	1,293.25	10.42	384.00	3,688.00	June 11, 1913	Asphalt, bituminous base <sup>1</sup>	1889		Cranford Paving Co.
94.65	33.00	4,100	86.72	249.74			732.54		201.98	3,090.45	do.	do. <sup>1</sup>	1889		Do.
92.12	30.00	3,900	83.75	239.51			736.31		184.08	2,813.68	May 21, 1913	do. <sup>1</sup>	1889		Do.
95.52	33.00	4,160	87.98	260.01			792.63		225.46	2,219.73	June 3, 1913	do. <sup>1</sup>	1889		Do.
470.45	2,113.47	324,505	6,892.66	19,065.65	10,599.51	12,239.19	25,423.68	9,689.45	23,151.52	221,598.28					

\* \$12,134.52 paid from 1914 appropriation.

MINOR REPAIRS.

.....	\$8,360.19
.....	5,166.23
.....	116,621.44
.....	51.07
.....	\$30,198.93
.....	3,513.33
.....	2,306.88
.....	10,788.21
.....	8,597.56
.....	1,227.60
.....	26,433.58
.....	56,632.51
.....	221,598.28
.....	278,230.79

1.00 charged to railroad companies.



TABLE A.—Street railroads in operation in District July 1, 1913.

Name of company.	Underground electric.		Overhead electric.	
	Double track.	Single track.	Double track.	Single track.
Washington Railway & Electric Co.:	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>
Metropolitan.....	8.60	3.98	.....	.....
City & Suburban.....	3.86	2.36	5.58	.....
Brightwood.....	.....	.....	5.93	.....
Georgetown & Tennallytown.....	.....	.....	4.16	.....
Anacostia & Potomac River.....	7.65	.....	3.10	.....
Washington & Glen Echo.....	.....	.....	3.88	.....
Total.....	20.11	6.34	22.65	.....
Capital Traction.....	20.19	3.60	3.57	.....
Columbia.....	2.77	.....	4.12	0.89
Washington, Alexandria & Mount Vernon.....	.30	.46	.....	.....
East Washington.....	.....	.....	.....	.50
Washington, Spa Springs & Greta.....	.....	.....	.....	2.65
Tracks used in common by Capital Traction and Washington Railway & Electric Co.....	43.37	10.40	30.34	4.04
Tracks used in common by Washington Railway & Electric and Washington, Alexandria & Mount Vernon Co.....	1.55	.....	.....	.....
Total.....	.40	.....	.....	.....
Total.....	45.32	10.40	30.34	4.04
Baltimore & Washington Transit Co.....	.....	.....	.....	2.33

TABLES B AND C.—Character and extent of roadway pavements July 1, 1913.

Section.	Asphalt.	Asphalt block.	Bituminous concrete.	Cement concrete.	Granite and rubble.	Vitrified block.	Cobble.
Northwest.....square yards..	1,684,677	37,593	12,862	.....	167,620	16,747	32,705
Northeast.....do.....	271,199	233,314	.....	.....	25,193	3,882	.....
Southeast.....do.....	181,062	215,337	.....	.....	43,734	.....	8,689
Southwest.....do.....	224,997	60,838	822	.....	191,729	3,138	16,159
Georgetown.....do.....	136,900	21,204	916	.....	58,677	1,635	14,426
Suburban.....do.....	310,816	82,723	24,540	15,190	27,394	.....	.....
Total.....	2,809,651	651,014	39,140	15,190	514,347	25,402	71,979
Gutters.....square yards..	196,390	.....	1,839	857	.....	.....	.....
Railroad pavement.....do.....	360,000	3,500	692	.....	150,000	.....	.....
Total.....	3,366,041	654,514	41,671	16,047	664,347	25,402	71,979
Miles.....	148.27	33.37	2.13	.8	25.96	1.4	3.75

Section.	Macadam.	Gravel and unimproved.	Gutters on asphalt streets.	Gutters on bituminous concrete streets.	Pavements maintained by street railways.	Total.
Northwest.....square yards..	16,728	57,000	113,372	477	255,150	2,394,931
Northeast.....do.....	18,541	203,512	23,319	.....	70,000	848,960
Southeast.....do.....	17,736	274,086	13,417	.....	47,600	801,661
Southwest.....do.....	25,968	125,448	21,695	129	55,900	726,823
Georgetown.....do.....	9,770	23,281	3,493	101	35,700	306,103
Suburban.....do.....	1,359,455	1,375,000	21,094	1,132	92,400	3,309,770
Total.....	1,448,198	2,058,327	196,390	1,839	556,750	857
Gutters.....square yards..	.....	.....	.....	.....	.....	.....
Railroad pavement.....do.....	.....	.....	.....	.....	.....	.....
Total.....	1,448,198	2,058,327	.....	.....	142,558	8,389,105
Miles.....	94.80	160	.....	.....	.....	470.48

<sup>1</sup> 42,558 square yards of wood, scoria, and other material.

TABLE G.—Charges against street railroads (work in connection with paving and resurfacing).

## WASHINGTON RAILWAY &amp; ELECTRIC CO.

Street.	From—	To—	Section.	Amount.
East Capitol	First NE.	Fleventh NE.	Northeast.	\$2,274.88
Harvard	Columbia Road.	Sixteenth.	Northwest.	20.86
G	Tenth.	Twelfth.	do.	371.60
New York Avenue.	Fifth at Fifth.	Seventh.	do.	85.71
Massachusetts Avenue.	Tenth at Fleventh.	Twelfth.	do.	123.25
R	Fckington Place.	Third.	Northeast.	450.56
T.	Third.	Fourth.	do.	302.50
Fourth.	T.	V.	do.	138.70
Do.	S.	T.	do.	16.99
Ninth (west side).	F.	G.	Northwest.	132.56
Ninth and G NW., north- west and southeast cor- ners, change of tracks.				617.48
Work by heater method.				4,485.09
Minor repairs on various streets.				5.28
Total.				2,513.84
				7,004.21

## CAPITAL TRACTION CO.

East Capitol at Eighth.			Northeast.	\$14.88
Florida Avenue.	V.	V.	Northwest.	11.69
U NW. at Eighteenth, realignment of tracks.				1,011.43
Pennsylvania Avenue.	Third.	Sixth.	Northwest.	854.62
Do.	Thirteenth.	Fourteenth.	Southeast.	19.63
Eighth.	H.	K.	Northeast.	510.85
Pennsylvania Avenue.	Twenty-first.	Twenty-second.	Northwest.	475.10
Pennsylvania Avenue (south side).	Nineteenth.	Twenty-first.	do.	376.36
New Jersey Avenue.	Massachusetts Avenue.	H.	do.	144.41
New Hampshire Avenue.	T.	U at V.	do.	23.19
Work by heater method.				3,442.16
Minor repairs.				166.32
Total.				560.41
				4,168.89

## WASHINGTON, ALEXANDRIA &amp; MOUNT VERNON CO.

Minor repairs.	\$152.37
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TABLE H.—Work done by day labor under the appropriation "Repairs to streets, avenues, and alleys," July 1, 1912, to June 30, 1913.

Brick sidewalk relaid.	square yards.	14,843
Asphalt block paved.	do.	10,426
Asphalt block repaved.	do.	20,012
Vitrified block paved.	do.	1,190
Vitrified block repaved.	do.	2,567
Macadam roadway.	do.	6,875
Curb reset.	linear feet.	2,096
Flag laid.	do.	160
Flag relaid.	do.	1,965
Granite block laid.	square yards.	5,781
Asphalt tile relaid.	do.	1,155
Cement walk relaid.	do.	1,215
Grading.	cubic yards.	2,694
Graveling.	square yards.	23,822
Cobble relaid.	do.	5,227
Dangerous holes repaired.	do.	3,500
Labor, including adjusting plumbing.		\$30,778.92
Labor patching asphalt block roadways.		15,839.81
Material.		14,733.37

TABLE I.—Regular permit, 1913.

Job No.	Location.	For whom done.	Grading.	Cement sidewalk laid.		Curb reset.	Curb set.		Vitrified block paved.	Asphalt block paved.	Cement curb laid.	Cost.
				Sq. yds.	Lin. ft.		6 by 20 inches.	8 by 8 inches.				
2000	1424 to 1426 and 1428 D St. SE.	Julius Winig.		33.40								\$42.08
2001	West side of Brown St. N.W., between Newton and Meridian Sts.	Terrill & Little.		28.89								38.29
2002	4034 Georgia Ave. N.W.	Mary B. Ward.		16.73								21.08
2003	Connecticut Ave., between Jenifer and Keokuk Sts.	Allan E. Walker.		411.07								517.94
2004	Southeast corner 36th and N St., and 31st St., south of N St.	Georgetown University Hospital.		335.85								340.11
2006	1239 Pennsylvania Ave. SE.	Geo. L. Iseman.		21.20								26.7
2007	1948 to 1360 C St. NE.	A. C. Merriam.		70.93								89.38
2008	Lamont St. N.W., east of Warder St.	James F. Brennar.		110.22								138.87
2010	North side Bancroft St., between 23d and 24th Sts., and northwest corner 23d and Bancroft Sts.	Hornblower & Marshall.		149.60			223.52					498.20
2011	Southwest corner 9th and Buchanan Sts.	Mrs. R. I. Hall.		53.33								67.20
2012	2150 Wyoming Ave. N.W.	Chas. A. Longley.		48.62								49.01
2013	North side Quebec St. N.W., from Georgia Ave. to Warder St.	Kennedy Bros.			21.56				6.11		490.94	662.38
2014	South side Quebec St. N.W., from Georgia Ave. to Warder St.	do.						19.70			489.63	696.51
2015	South side Otis Place NW., between New Hampshire and Georgia Aves.	John L. Warren.		181.59								228.80
2016	D St. side Mechanics Savings Bank, 7th and D St. N.W.	Merchants and Mechanics Savings Bank.		94.56								144.81
2017	East side Potomac St., between Water and Grace Sts.	District of Columbia Paper Manufacturing Co.		155.08				290.22				530.97
2018	14th St. N.W., between Emerson and Gallatin Sts.	Washington Loan & Trust Co.		699.94				653.69				1,676.07
2019	4015 Pessenden St.	Mary E. Hughes.		42.69								53.79
2020	Upspur St. N.W., from 7th St. to alley.	Thrift Building Co.		90.20			24.02					146.76
2021	West side 36th St., to rear of lot 16, square 1921.	H. L. Rust.		102.32								123.92
2022	Champlain Ave., below Euclid St.	Boyle-Robertson Construction Co.						156.17				186.99
2023	North side of Shepherd St., east of 8th St.	C. B. Hunt.		202.33								254.94
2024	North side of Rhode Island Ave., west of 2d St.	John E. Dawson.		150.73								183.48
2025	30 to 64 West N.W.	D. J. Deimler.		238.80								300.89
2026	Hamlin St. N.E., west of 15th St.	I. V. Larrage.		76.00								93.76
2027	South side Monroe St., between 18th and 19th Sts.	Carl H. Smith.		76.20								96.01

TABLE 1.—Regular permit, 1913—Continued.

Job No.	Location.	For whom done.	Grading. Cu. yds.	Cement sidewalk laid. Sq. yds.	Curb reset. Lin. ft.	Curb set.		Vitri- fied block paved. Sq. yds.	Asphalt block paved. Sq. yds.	Cement curb laid. Lin. ft.	Cost.
						6 by 20 inches. Lin. ft.	8 by 8 inches. Lin. ft.				
2028	South side U St. N.E., from Lincoln Road to Summit Place; both sides 1st Place from V St. to alley; east side Lincoln Road, from U St. to 14th St.; both sides 1st St., from U St. to Todd Place; all sides square 3537, Highview.	Harry Wardman		1,387.47							\$2, 126.21
2029	1736 Kilbourne St.	James A. Cahill		12.41	7.00	7.10					23.18
2030	North side Ingraham St., between Illinois and Georgia Ave.	Geo. C. Hough		59.27							74.07
2031	Hamlin St., east of 18th St. N.E., lot 10.	R. B. Thomasson		23.33							29.40
2032	Hamlin St. N.E., east of 18th St., lot 9	Geo. D. Mitchell		9.93							12.52
2033	C St. N.E., between 13th and 14th Sts., and 14th St. between C and D Sts.	John E. Hasslip		258.49							260.56
2034	South side of L St., between 8th and 9th Sts.	do.					195.00				224.37
2035	Alley, square 198.	E. O. Wagerhorst							63.00		128.59
2036	Alley south section square 3031.	Kennedy Bros.						905.00			2, 067.70
2037	1783 to 1785 Florida Ave. NW	O'Hanlon & O'Connor		70.14							70.70
2038	C St., Virginia Ave., and B St., and 17th and 18th Sts. sides south of square 1731.	Pan American Union		357.65	49.00	310.65					4,768.14
2039	North side Decatur St., west from 16th St.	Alonzo O. Bliss		136.60							168.10
2040	1467 Chapin St. NW, and Dunn Barton Ave.	Mary L. Lewis		14.00							17.64
2041	South side Irving St., between Dunn Barton Ave.	Georgetown Gas Light Co.		79.77	23.00						107.90
2042	South side corner 6th and Butternut Sts.	H. I. Thornton		228.32							285.16
2043	3301 to 3305 Brown St. NW	Chas. J. Groselose		40.25	8.00						51.98
2044	Bladensburg Road, front Mount Olivet Cemetery.	Mount Olivet Cemetery		151.07							191.85
2045	North side Decatur St. NW, between 16th and 17th Sts.	W. D. Groubeck	33	33.60							64.11
2046	South side Water St., east of Wisconsin Ave.	Capital Traction Co.		246.79	197.00						309.72
2047	23d St., between Wyoming Ave. and Kalorama Road.	Frank Walter		113.99	9.00	180.21					375.25
2048	West side Mount Pleasant, between Irving and Kilbourne Sts.	Julius C. Dowell		10.00	6.00						10.39
2049	South 90 feet alley square 2557	P. O'Hanlon	267								140.17
2050	3001 P St., NW	C. Irving Wood		87.17	107.00						146.16
2052	North side Columbia Road, between 11th and 13th Sts.	John H. Nolan		136.00							157.09
2053	Southeast corner 14th and C Sts. NW, 14th St. side.	Potomac Electric Power Co.				183.26					271.48
2054	138 U St. N.E.	E. P. Carlin		91.83							115.71

2055	Massachusetts Ave. side, 119 Massachusetts Ave. NW.	Geo. W. Boyd.	64.16						80.84
2057	4268 Wisconsin Ave, NW.	Chesapeake & Potomac Telephone Co.	84.47						150.16
2059	Southwest corner 7th and A Sts. SE.	James A. Ferris.	140.03						170.82
2060	K St. and Virginia Ave. SE., between 9th and 10th Sts.	James T. Kenyon.	222.00	99.55					261.90
2061	Avenue H, 486 Pennsylvania Ave. NW.	Clarence Beall.	42.78						53.90
2062	K St. SE., from lot 41, square 951, and corner 10th and K Sts.	Henry C. Emrick.	32.38						32.63
2063	South side W St. NW., between 14th and 15th Sts.	Gregg & Liesenring.	134.25						140.10
2065	Lot 29, Virginia Avenue SE., between 8th and 10th Sts.	H. C. Emerick.	13.33						13.44
2066	West side 19th St., between Lamont and Kilbourne Sts.	L. E. Breuninger.		138.00					151.05
2064	15th St. NE., between C and D Sts.	Wm. Murphy.	172.38						222.10
2068	Northeast corner 19th and Kenyon Sts.	Geo. Y. Worthington.	242.37	4.71					874.96
2080	13th and F Sts. NW.	Julius Garfinkle & Co.	9.00						8.83
2085	15th St. NW., south from Harvard St.	L. E. Breuninger.		10.00	249.80				318.46
2088	1135 6th St. NW.	H. T. White.	21.53	18.00					27.11
2069	Alley, square 563.	Geo. W. Boyd.						101.00	160.84
2071	1308 7th St. NW.	J. Tarsher.	27.17	16.00					32.94
2072	Southwest corner 23d and U St. NW.	A. F. Lucas.	248.89						680.82
2074	East side 18th St. NE., south of Jackson St.	Ella M. Smith.	77.59		270.16				97.76
2075	South side Sherman Ave., between Columbia Road and Irving St.	J. S. Gruver.	194.43						244.98
2076	South side C St. SE., between 16th and 17th Sts.	do.	95.40						120.41
2077	1920 23d St. NW.	Paul H. MacNeil.	172						211.94
2078	North side Tracey Place and 23d St. NW.	R. H. Liggett.	178.02		95.62				228.38
2081	Corner Riggs Place and New Hampshire Ave.	Geo. E. Hamilton.	85.37	7.00					104.98
2082	Southwest corner 16th and V Sts. NW.	Chas. C. Milburn.	139.19	114.00	18.84				202.79
2084	3520 16th St. NW.	G. T. Smallwood.	117.40						147.92
2086	2308 Tracey Place NW.	Berkley L. Simmons.	33.33						57.01
2088	Corner 15th and Rhode Island Ave. NW.	D. C. Weeks & Son.	303.66		14.13				336.05
2089	West side 12th St. SE., between G and I Sts.	C. A. Didden & Son.	40.17						50.68
2090	East side Sherman Ave. and west side of 9th St. NW.	Real Estate Security Co.	298.61	9.40					380.29
2092	1822-1812 Kilbourne St. W.	G. W. Worthington & Son.			120.24				196.07
2093	1927 19th St. NW.	A. G. McClintock.	97.25	105.00					127.94
2094	Northwest corner M and Robinson Sts.	Wm. E. Garner.	72.90						93.43
2097	1937 4th St. NE.	G. W. Morrison.	12.19						15.36
2098	1939 4th St. NE.	E. Ralph Oassen.	10.53						13.27
2099	West side 17th St. NW., between Park Road and Newton St.	L. E. Breuninger.		200.00					80.05
2101	613 22d St. NW.	Mrs. B. M. Glover.	26.24						33.06
2102	1961 4th St. NE.	Chas. E. Tribbey.	9.95						14.11
2107	12th St. SE., between G and I, square 995.	C. A. Didden & Son.						20.00	37.00
Total.			633,483.90	1,011.22	643.52	2,875.44	1,132.11	63.00	24,507.67

1 Done in connection with job 2077.

TABLE K.—Assessment work, 1913.

Job No.	Location.	Grading. Cu. yds.	Cement sidewalk. Sq. yds.	Curb reset. Lin. ft.	Curb set.			Vitrified block paved. Sq. yds.	Cobble paved. Sq. yds.	Cement curb set. Lin. ft.	Cost.
					6 by 20 inches. Lin. ft.	8 by 8 inches. Lin. ft.	Old. Lin. ft.				
3002	Alley, square 2839	750									\$2, 225.46
3007	Kalorama Road NW., between 20th St. and Connecticut Ave.										
3010	Both sides 5th St. SE., between B and C Sts.		365.40								898.24
3015	East side 13th St. SE., between Massachusetts Ave. and East Capitol St.		244.16	11.00							380.08
3017	West side Georgia Ave. NW., between Quincy St. and Engine Co. No. 24		193.13								252.14
3018	Both sides Lawrence St. NE., between 17th and 18th Sts.										243.34
3019	West side 24th St. NE., between Franklin and Mills Sts.	50	533.33								700.87
3020	North side Le Roy Place, between Connecticut Ave. and Phelps Place		68.40								86.18
3022	East side Florida Ave. NW., between alley and Seaton St.		144.87								147.60
3023	East side 27th St. NW., between Cathedral Ave. and Garfield St.		49.95								62.93
3024	East side Quincy St. NE., from cement walk to 13th St.		162.57								205.83
3025	North side Jackson St. NE., between 20th and 22d Sts.	57	155.47								228.80
3029	Alley, square 446		353.12								392.42
3030	South side Madison St. and west side 9th St., from Madison to Longfellow Sts.							745			1, 444.86
3031	North side Butterut St., between 5th and 6th Sts. NW	273	411.33								518.28
3036	East side 8th St. NW., from Webster St. N. to cement walk.		282.93								514.15
3038	North and south alley, square 441	480	78.80								99.29
3041	Alley, square 2004	250						827.00			1, 529.45
3044	Alley, square 2259							160.00			311.56
3045	Alley, square 2092	277	141.84					224.00			409.50
3052	Alley, square 2082	985							554		1, 249.22
3053	Alley, square 2888		39.00					1, 112.00			2, 698.80
3053	Alley, square 2041	1, 272									3, 372.50
3057	Alley, square 561	595						1, 155			1, 909.93
3059	Alley, square 2583	3, 500						980.00			1, 643.27
3061	Alley, square 3027	978						908.00			3, 975.05
3062	North and south alley, west part square 2921	396						1, 565.00			2, 566.64
3063	Alleys, square 964							1, 024			1, 381.66
								422.00			
								627.00			











3262	East side 10th St. NW., between C St. and Louisiana Ave.	396.30	128.00							438.53
3264	South side of L St. NW., from 13th St. to alley.	107.08								109.99
3266	North side Virginia Ave. and F St. NW., between 2d and 24th Sts.	568.32								582.05
3274	South side F St. NW., between 22d and 23d Sts.	242.16	84.00							296.14
3276	South side L St. NW., from 5th to New York Ave., and New York Ave., from L to 6th Sts.	312.71								317.02
3277	South side New York Ave., from 6th to 7th Sts.	626.57								634.60
3284	Both sides R St. NW., between 16th St. and New Hampshire Ave.	1,899.06	996.00	198						2,272.18
3287	West side 10th St. NW., bet. L and M Sts.	561.58								577.08
3292	South side Massachusetts Ave., from 10th to L Sts., and L St. from Massachusetts Ave. to 11th St.	310.82								313.31
3293	West side 17th St. NW., between D and E Sts.	359.88								367.48
3294	Both sides of O St. NW., from 11th to 12th Sts.	514.20	130.00							521.46
3298	Both sides of O St. NW., between 8th and 9th Sts.	332.95	481.00	504.33						1,025.18
3313	North side of N St. NW., between 31st and 32d Sts.	356.82	7.40	413.90						503.29
3321	North side Bancroft Place, between 23d and 24th Sts.	279.55	225.00							850.54
3342	North side D St. NW., between 12th and 13th Sts.	522.96	379.00							598.22
3343	East side 6th St. NW., bet. L and M Sts.	412.68	585.00							527.75
3344	West side 7th St. NW., between N and O Sts.	880.87	532.12							735.13
3345	Both sides 7th St. NW., between M and N Sts.	120.57	550.00							1,065.39
3351	West side 14th St. NW., from R to Corcoran Sts.	188.87								124.01
3352	West side 14th St. NW., from School to Church Sts.	188.87								190.38
3355	West side 29th St. NW., between Q and R Sts.	185.33								188.39
3360	Alleys, square 3103	420								1,407.35
3367	South side Columbia Road NW., between Georgia and Sherman Aves.	492.47	824.00							863.55
3377	O St. NW., between 10th and 11th Sts.	17,061.07	9,130.35	20,684.88	15,528.00	198	22,289.74	19,151	5.00	1,458.21
	Total	26,992								179,761.17

Not completed.

TABLE L.—Sidewalks and curbs, 1913.

Job No.	Location.	Cement sidewalk.	Curb reset.	Curb set.		Grading.	brick sidewalk relaid.	Cost.
				6 by 20 inches.	8 by 8 inches.			
		Sq. yds.	Lin. ft.	Lin. ft.	Lin. ft.	Cu. yds.	Sq. yds.	
2502	Reservation 77, between D Street, Rhode Island Avenue, and W Street NE.	125.56		302.50		42		\$539.59
2503	Both sides Seventh Street, from P Street north to R Street south.	994.34		50.25				1,458.16
2505	Eleventh Street NW., front new Normal school.	910.21			312.40			1,390.56
2506	New Hampshire Avenue side of Reservation 149.	105.06	300.00					102.36
2508	Seventh Street SE., front of B. R. French School.	98.25						93.82
2509	South side Irving Street, between Cedar and Sherman Avenues.	139.67						167.60
2511	Reservation 270, between Connecticut Avenue, Florida Avenue, and S Street.	145.46						174.35
2517	West side Fifth Street NW., between Butternut and Cedar Streets.	20.09						24.11
2520	Reservation 270, between Connecticut Avenue, Florida Avenue, and S Street.							
2523	Pennsylvania Avenue side of Reservation 28, between Pennsylvania Avenue, Twentieth, Twenty-first, and Twenty-second Streets.				360.42			432.43
2524	Ninth Street side of Reservation 30, Pennsylvania Avenue, Eighteenth, Nineteenth, and H Streets NW.		20.95		146.45			200.24
2525	Reservations 68 and 69, Massachusetts Avenue, Tenth and Eleventh Streets.		6.24		803.23			1,002.24
2530	North side public park, square 1670, Fessenden and Wisconsin Avenues.	102.00						93.53
2539	Eighth Street NW., between S and T Streets.						132	25.71
2540	Fourteenth Street NW., from Q Street south, front of public school.	112.87						139.52
2541	Farragut Street, between Thirteenth and Fourteenth Streets, front West School.	173.13						164.56
2548	F Street side of Reservation 101.	56.19						53.91
2555	New York Avenue NW., between Sixth and Seventh Streets.	170.62	115.00					163.80
2556	South side of R Street NW., between Seventeenth Street and New Hampshire Avenue.	123.51						155.52
2537	Total.	3,306.96	442.19	352.75	1,622.50	42	132	6,404.24

TABLE M.—Miscellaneous work, 1913.

Job No.	Location.	Appropriation.	Grading.	Cement sidewalk laid.	Brick sidewalk relaid.	Curb reset.	Curb set.		Vitrified block relaid.	Terracotta pipe.	Cement curb set.	Description of work.	Cost.
							6 by 20 inches.	8 by 8 inches.					
6002	Massachusetts Ave. NW., between North Capitol and G Sts.	Elimination of grade crossing.	Cu. yds.	Sq. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Lin. ft.	Sq. yds.	Lin. ft.	Lin. ft.	Preliminary work.	\$97.06
6003	Virginia Ave. SW., between Delaware Ave. and South Capitol St.	do.										Improve.	830.03
6004	Vicinity of Union Station Plaza.	do.										Restoring surface conditions.	554.61
6005	Various streets.	Parking Commission.										Paving tree spaces.	231.25
6006	Mixing road oil, property yard.	Street cleaning department, District of Columbia.										Mixing road oil.	477.75
6008	Alley, square 1043.	Street cleaning department stables.							08			Paving.	180.88
6009	517 2d St. NE., south side of alley, square 754.	Elimination of grade crossings.										Concrete wall.	30.60
6011	Southwest corner Rhode Island Ave. and 14th St.	Water department.										Repair.	19.02
6015	Chan Bridge.	Suburban sewers.										Lay pipe.	35.90
6022	Cedar St. Bridge.	Construction Cedar St. subway and bridge.										Construct retaining wall.	212.79
6024	E St. SE., near Washington Asylum.	Parking Commission.										Adjust plumbing.	34.50
6029	E St. NE., between North Capitol and Union Station.	Elimination of grade crossings.										Relaying brick sidewalk.	126.88
5000	G St. SE., between Pennsylvania Ave. and 14th St.	G St. SE., Pennsylvania Ave. to 14th St.										Adjust plumbing.	33.50
5010	North and south alley, square 1043.	Pave north and south alley, square 1043.	900						955				1,936.09
5021	B St. and Virginia Ave. NW.	Pave B St. and Virginia Ave. NW.										Repairs.	159.50
5030	Allison St. NW., Georgia Ave. to 9th St.	Grade Allison St. NW., Georgia Ave. to 9th St.										Adjust plumbing.	12.50
5032	Belmont St. NW., 13th to 14th Sts.	Pave Belmont St. NW., 13th to 14th Sts.										do.	22.25
5080	Columbia Road NW., Georgia Ave. to Park Place.	Grade and improve Columbia Road NW.										do.	58.75
5081	Columbia Road NW., between Georgia Ave. and Park Place.	do.										Spreading Tarvia "A"	673.79

TABLE M.—Miscellaneous work, 1913—Continued.

Job No.	Location.	Appropriation.	Grading. Cu. yds.	Cement side-walk laid. Sq. yds.	Brick side-walk relaid. Sq. yds.	Curb reset. Lin. ft.	Curb set.		Vitrified block relaid. Sq. yds.	Terraced curb pipe. Lin. ft.	Cement curb set. Lin. ft.	Description of work.	Cost.
							6 by 20 inches.	8 by 8 inches.					
5101	Fairmont St. NW., between 11th and 13th Sts.	Pave Fairmont St. NW., between 11th and 13th Sts.										Adjust plumbing.	\$42.25
5112	Fessenden St. NW., Wisconsin Ave. to Myer Road.	Grade and improve Fessenden St. NW.										Repair.	18.75
5121	14th St. NE., Jackson and Kenton Sts.	Grade 14th St. NE.										Repair with road machine.	239.26
5122	14th St. NE., between Monroe and Newton Sts.	do.										Lowering service pipe.	133.75
5131	Hamlin St. NE., Rhode Island Ave. to 20th St.	Grade and improve Hamlin St. NE.										Preparing cut, grade, etc.	305.62
5141	Hunt Place NE., Minnesota Ave. to Dean Ave.	Hunt Place NE.										Repair.	25.88
5151	Irving St. NW., 11th to 13th Sts.	Pave Irving St. NW.		42									48.62
5152	Irving St. NW., between 11th and 13th Sts.	do.											519.33
5161	Jackson St. NE., between 17th and 18th Sts.	Grade and improve Jackson St. NE., 17th to 18th Sts.					409.28		1.023			Spreading and rolling stone.	229.89
5182	Jackson St. NE., between 20th and 22d Sts.	Grade and improve Jackson St. NE., 20th to 22d Sts.										do.	255.78
5211	Minnesota Ave. SE., from Pennsylvania Ave. to 28th St.	Grade and gravel Minnesota Ave. SE.								60			49.49
5212	Minnesota Ave. SE., north of Pennsylvania Ave.	do.										Building sidewalk.	38.00
5230	9th St. NW., Barry Place to Euclid St.	Grade 9th St. NW.	2.150										1,164.31
5240	9th St. NW., Kansas Ave. to Allison St.	Grade and improve 9th St. NW.										Adjusting plumbing.	15.50
5251	9th and School Sts. NW.	Grade and improve 9th and Sheridan Sts. NW.										Spreading and rolling stone.	1,778.78
5262	Both sides Sheridan St. NW., between 9th St. and Georgia Ave.	do.					40.62	27.65			77.43		453.85
5291	Adjacent to southeast corner 34th and Newark Sts.	Grade 34th St. NW.		14									67.00
5292	Lowell and Newark Sts.	do.										Shaping roadway.	83.12



TABLE M.—Miscellaneous work, 1913—Continued.

Job No.	Location.	Appropriation.	Grading.	Cement side-walk laid.	Brick side-walk relaid.	Curb reset.	Curb set.		Vitrified block relaid.	Terra-cotta pipe.	Cement curb set.	Description of work.	Cost.
			Cu. yds.	Sq. yds.	Sq. yds.	Lin. ft.	6 by 20 inches.	8 by 8 inches.	Sq. yds.	Lin. ft.	Lin. ft.		
5070	Bruce Place SE.	Gravel Bruce Place SE.										Paving tree spaces.	\$750.31
6035	Various streets.	Streets, District of Columbia, Parking Commission.		15									287.12
6036	Farragut St., between 13th and 14th Sts.	Public schools, District of Columbia, 1913, gardens.											24.54
6038	Roseale Play Grounds.	Emergency fund, 1913.										Plow and harrow.	26.51
6052	Potomac water front, foot of 10th St.	Streets, District of Columbia, Parking Commission.			60							Removing portion of walls.	29.46
6051	Various streets.	Streets, District of Columbia, Parking Commission.										Paving tree spaces.	41.21
5045	Various streets in Anacostia.	Grade and improve Anacostia streets.										Cobble gutters and gravel.	1,203.17
5000	Brothers Place, SE.	Grade and gravel Brothers Place.										Grade and gravel.	322.61
5090	18th St. NE., Newton to Irving Sts.	Grade and improve 18th St. NE.										Spread and roll macadam.	996.45
5171	Jackson St., between 10th and 12th Sts.	Grade and improve Jackson St. NE.										do.	730.94
5182	Jackson St. NE., 20th to 22d Sts.	Grade and improve Jackson St. between 20th and 22d Sts.										do.	255.78
5191	Jefferson St. NW., Georgia Ave. to 9th St.	Grade and improve Jefferson St. NW.										do.	217.94
5201	Kearny St. NE., 10th to 12th Sts.	Grade and improve Kearny St. NW.										do.	446.12
5213	Minnesota Ave. between Pa. Ave. and 24th St.	Grade and gravel Minnesota Ave. NE.											175.50
5221	Monroe St. NE., 15th to 17th Sts.	Grade and improve Monroe St. NE.										Spread and roll macadam.	1,087.36
5241	9th St. NW., Kansas Ave. to Allison.	Grade and improve 9th St. NW.										Spread tar coat.	166.00
5270	17th St. NE., Hamlin to R. I. Ave.	Grade and improve 17th St. NE.											451.24
5321	Tilden St. NW.	Grade and improve Tilden St. NW.										Prepare, cut, grade, and place stone.	1,816.80
5342	22d St. SE., from Minn. Ave. to Railroad Ave.	Grade and improve 22d St. SE.										Grading, rolling, and spreading stone.	393.57
			3,550	67	1,300	11.50	40.62	5,871.62	1,666	87	1,934.64		32,703.40



TABLE N.—Whole-cost work 1913.

Job No.	Location.	For whom done.	Grading.	Cement side-walk.	Brick side-walk relaid.	Curb set 8 by 8 inches.	Vitrified block drive-way.	Granite block.	Terra-cotta pipe.	Description of work.	Cost.
6000	774 Girard St. NW	Gyro Motor Co.	Cu. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Sq. yds.	Sq. yds.	Lin. ft.	Oiling roadway	\$11.50
6001	Georgia Ave., north and south of Rock Creek Church Road	Wash. Rwy. & Elec. Co.						15.00			136.16
6007	Adjacent to Georgetown University Hospital	C. A. Didden & Son.					18.0			Repair	24.02
6010	1st St. east between B St. south and B St. north.	P. B. & W. R. Co.								Grading, building wooden bridge, etc.	914.20
6012	Massachusetts Ave., between 24th and 25th Sts. NW	Allan E. Walker & Co.								Macadamize and laying pipe.	1,000.00
6013	Rittenhouse St. NW, between Broad Branch Road and 32d St.	Geo. T. Rees.									1,000.00
6014	Across Quincy St. NE, between 13th and 14th Sts.	Paul Connor							60		12.50
6016	Georgia Ave. at Upshur St., Piney Branch Road, and Butternut St.	Wash. Rwy. & Elec. Co.								Repairing crossings	244.94
6018	18th and W St. NW	Capital Traction Co.		65.76		63.10				Lowering curb	239.85
6019	604 Butternut St.	L. J. Simonson.								Repairing cement walks.	8.75
6023	Various streets.	Rudolph S. Biome Co.									35.60
6026	407 13½ St. NW	McLauchlen Banking Corporation.		9.00							11.35
6028	Alley, square 291	C. R. Edmonston.					31.0				58.59
6032	Square 501, between garage and alley	James J. Kilroy	2.0				5.3				10.20
6033	Square 501, between stable and alley	Ed. J. Keller	5.9				36.0				61.39
6034	25th St. NE, between Hamlin and Irving	O. J. Nigh								Surface with old material.	73.50
6027	6th St. side of 600 Cedar St.	W. A. Orton						5.75			9.75
6040	South side E St. SE, between 15th and 16th Sts.	Middaugh & Shannon.			86.5						48.00
6044	South side H St., west of 17th St.	Metropolitan Club		27.00							28.27
6045	Adams St., along west curb line of 2d St.	Water rept., D. C.									43.63
6048	Front 1736 G St. NW	Young Men's Christian Association				9.42	13.0				45.03
6049	1st St. NW, and Indiana Ave.	W. M. Galt & Co.									106.86
6053	928 9th St. NW	Roland Wallace.		7.00			51.0				5.86
6043	Bladensburg Road	Wash. Interurban Rwy. Co.								Repair	38.11
6050	12th St. SE., between G and I Sts., Square 995	C. A. Didden & Son and J. S. Memberg.					165.0				304.29
			7.9	108.76	86.5	72.52	319.3	20.75	60		4,472.35

TABLE O.—Number of square yards and cost charged for repairs to cuts made by plumbers and others in streets, avenues, and alleys during the fiscal year ended June 30, 1913.

Item No. 1 shows the number of cuts repaired for various plumbers.

Item No. 2 shows the number of cuts repaired and the cost thereof on "whole cost" work to which 5 per cent is added for tools, clerk hire, etc., for the maintenance of the miscellaneous trust fund deposits (District of Columbia, operating account), which fund is used to pay all accounts for labor, material, tools, etc., used in this class of work, and also includes the work done for gas, electric light, and telephone companies, which work is charged at other than the flat rates charged to plumbers.

Item No. 3 shows the number of cuts repaired on account of sewer department and the cost of the same.

Item No. 4 shows the number of cuts repaired on account of the water department and the cost of the same.

Item No. 5 shows the number of cuts repaired for work done on account of other appropriations of the District of Columbia and the cost of the same; also the cost of work charged against retents and appropriations of the General Government.

	Number.	Square yards.	Cost (amount charged).
<b>Item No. 1. Plumber's cuts:</b>			
Sheet asphalt.....	574	1,246.00	\$4,049.05
Granite block.....	167	645.57	968.36
Asphalt block.....	316	1,455.26	2,182.89
Vitrified block or brick.....	299	657.90	1,644.76
Cobble and rubble.....	216	548.65	329.19
Macadam.....	506	1,383.36	1,660.04
Granolithic walks.....	796	923.34	2,077.51
Brick sidewalks.....	347	17,440.16	872.08
Bricks furnished.....		6,400.00	64.00
Asphalt blocks furnished.....		2,589.00	194.16
Vitrified blocks furnished.....		9,299.00	185.98
Cuts repaired at actual cost, plus 5 per cent.....	( <sup>2</sup> )	( <sup>2</sup> )	224.81
	3,221	6,860.08	14,452.83
<b>Item No. 2. Railroad, electric-light company, telephone company, and other corporations and individual depositors.....</b>			
	4,954	45,708.48	86,315.09
<b>Item No. 3. Various appropriations of the sewer department.....</b>			
	686	8,591.55	15,574.34
<b>Item No. 4. Various appropriations of the water department.....</b>			
	3,093	15,612.26	24,991.64
<b>Item No. 5. Various appropriations other than the above, including repairs to roads, streets, street lighting, electrical department, improvements, and repairs, assessment and permit work, parking commission, etc.....</b>			
	824	3,909.70	10,200.45
	12,778	80,682.07	151,534.35

<sup>1</sup> Feet, and not included in total number of square yards.

<sup>2</sup> Included in number of macadam cuts.

TABLE P.—Grading streets, alleys, and roads, 1913.

Job No.	Location.	Grading.	Cost.
		<i>Cu. yds.</i>	
1902	Gresham Place, between Fifth Street and Georgia Avenue.....	381	\$198.50
1903	S Street NW., between Thirty-fifth and Thirty-sixth Streets.....	140	56.25
1905	Thirtieth Street SE., between Pennsylvania Avenue and R Street.....	3,325	1,333.25
1906	Thirteenth Street NW., between Newton and Otis, and Otis Street, east of Thirteenth Street.....	1,930	772.12
1907	West side Ninth Street, between Allison and Buchanan Streets.....	1,008	403.12
1908	Twenty-fifth Street NW., between Hamlin and Irving Streets.....	392	156.87
1909	Park Place from Manor to Otis Streets.....	439	175.50
1910	Warder Street NW., between Columbia Road and Kenyon Street.....	841	336.38
1912	Oakdale Street NW., between Fourth and Fifth Streets.....	966	579.37
1913	Cedar Street NW., between Fourth and 100 feet east of Carroll Street, and Carroll Street between Cedar and 250 feet east.....	1,972	943.00
1914	Rittenhouse Street, between Broad Branch Road and Thirty-third Street.....	6,287	2,200.37
1916	Newton Street NW., west of Warder Street.....	925	297.37
1917	Ninth Street SE., between M and N Streets.....	583	233.25
1918	Walter Street SE., between Twelfth and Thirteenth Streets.....	612	442.06
1920	South side of Florida Avenue NE., between Fourth and Fifth Streets.....	150	62.00
1921	Southern half of Cedar Lane, square 2823.....	178	72.00
1922	Ninth Street NW., between Allison and Buchanan Streets.....	419	167.75
1923	Hamlin Street NE., between Twenty-fifth and Twenty-sixth Streets.....	898	359.50
1904	Various streets (sidewalks), cleaning.....		2,812.44
1919	Fifteenth Street SE., south of Morris Road.....	386	173.64
1934	Alley square 1873.....	45	14.50
1935	Tracey Place, between Twenty-third and Twenty-fourth Streets.....	300	125.50
			11,915.04

## REPORT OF THE SUPERINTENDENT OF STREET CLEANING.

WASHINGTON, D. C., *September 3, 1913.*

SIR: I have the honor to submit the following report of the street-cleaning division of the engineer department of the District of Columbia for the fiscal year ending June 30, 1913.

## CONTRACT WORK.

Throughout the year the following work has been done by contract under the direction of this division:

*Garbage.*—The collection and disposal of garbage daily, including Sundays, from such hotels, apartment houses, markets, and other like places within the city of Washington and such of its suburban sections as may be designated, from time to time, by the Commissioners of the District of Columbia.

The collection and disposal of garbage daily, excluding Sundays, from May 16 to October 15, both days inclusive, and three times a week from October 16 to May 15, both days inclusive, from all places not embraced in the preceding paragraph within the existing fire limits of the District of Columbia and certain of the more thickly populated sections on the outside of and adjacent to the fire limits.

The collection and disposal of garbage three times a week from May 16 to October 15, both days inclusive, and semiweekly from October 16 to May 15, both days inclusive, from all places not included in the preceding paragraphs in the city of Washington and its suburbs, as such suburbs may, from time to time, be designated by the Commissioners of the District of Columbia.

The collection of garbage is made in wagons carrying a covered iron box which is lifted from the wagons and loaded on cars at the transfer station. This box containing the garbage is then shipped by rail to the disposal plant owned by the contractor, located about 32 miles from Washington, and the garbage is there disposed of by the reduction process.

*Ashes.*—The collection and disposal of ashes within the existing fire limits of the District of Columbia and certain of the more thickly populated sections outside of and adjacent to the fire limits, weekly, from April 16 to October 31, inclusive, and semiweekly from November 1 to April 15, inclusive, from private residences, boarding houses, and lodging houses of not to exceed 25 rooms, and apartment houses containing not to exceed four families, and other like places, as may be designated by the Commissioners of the District of Columbia.

The collection and disposal of ashes from all private residences and such other like places corresponding to those included in the preceding paragraph from the remainder of the city of Washington and its suburban sections, as said suburban sections may, from time to time, be designated by the Commissioners of the District of Columbia, weekly, throughout the entire year.

The collections are made in wagons with canvas covers and disposed of by filling low ground on the outskirts of the city.

*Refuse.*—The collection and disposal of miscellaneous refuse, in the city of Washington and its more densely populated suburbs, as such suburbs may, from time to time, be designated by the Commissioners of the District of Columbia, once a week from all private residences, boarding houses, and lodging houses with not to exceed 25 rooms, and apartment houses containing not to exceed four families, and other like places as may be designated by the Commissioners of the District of Columbia, and from such public waste boxes as may be established by the street-cleaning division in the machine-swept section of the city and District.

The collections are made in wagons suitable for this purpose and what is not salable is disposed of at an incinerating plant owned by the contractor.

*Dead animals.*—The collection and disposal of dead animals daily, including Sundays, throughout the year, from every part of the District of Columbia upon notification to the contractor of the existence of said dead animals.

The collections are made in vehicles suitable for the purpose, and the disposal is accomplished by the reduction process at a plant owned by the contractor located about 4 miles from the city.

*Night soil.*—The collection and disposal of night soil from all privies, except such as are established by contractors on construction work, and from all streets, avenues, alleys, roads, and open lots in the District of Columbia upon receipt of notice from the superintendent of street cleaning.

The collections are made in air-tight receptacles designed for that purpose and transported therein on barges about 8 miles from the city and there used as fertilizer on a farm.

*Ashes from public buildings.*—The collection and disposal of ashes and refuse from buildings under the control of the Commissioners of the District of Columbia as such may accumulate.

This work is done by contract under the direction of this division, but paid for from the appropriation for the maintenance of each building in proportion to the quantity removed.

#### MUNICIPAL WORK.

Throughout the year the following work was done under the immediate direction of this division:

*Machine cleaning.*—The cleaning of all paved streets outside the white-wing area every two days. At the beginning of the year the territory under attention amounted to about 2,167,000 square yards. Additional newly paved streets were added during the year, increasing this total to 2,225,000 square yards. This cleaning was done by 4 gangs of sweepers, each consisting of 1 sprinkler, 3 machines, 4 carts, and from 4 to 6 broomers.

*Alley cleaning.*—The cleaning of all paved alleys in the District of Columbia about once every week. Additional alleys have been paved and added to those previously cleaned, bringing the total area cleaned from 1,033,000 square yards on July 1, 1912, to 1,060,000 square yards on July 1, 1913. This work was done by 2 gangs, each consisting of a 1-horse sprinkler, a 1-horse machine broom, 4 carts, and 6 broomers, and 1 gang of a 1-horse sprinkler, 3 carts, and 5 broomers, the latter used in alleys too narrow for the machine broom to work in.

*Suburban cleaning.*—The cleaning of all macadam, gravel, unpaved streets, not taken care of by the county, and unpaved alleys in the more thickly populated suburban sections about once every 10 days. Additional territory was added during the year from that taken care of by the division of county roads, increasing the total from 1,416,480 square yards to 1,431,525 square yards, the alleys under attention totaling an additional 38,439 square yards. Two gangs were used for this work, each composed of 4 carts and from 8 to 10 broomers.

*Hand patrol.*—The daily cleaning of all streets in the central portions of the city amounting to about 2,813,000 square yards. Due to additional streets being paved and slight changes in the machine work, this is an increase of 67,000 square yards over the territory under attention July 1, 1912. Approximately 219 men have been employed daily, divided into 5 gangs, and the dirt gathered by 13 two-horse wagons.

*Flushing.*—The flushing of cobblestone, granite, asphalt block, and poorly paved streets in the white-wing section of the city, amounting to about 310,000 square yards, an increase of 10,000 square yards over the territory under attention July 1, 1912. A battery of three pneumatic flushing machines has covered this territory about once in three or four days, the hand patrol removing the dirt from the gutters.

*Squeegeeing.*—The squeegeeing of nearly all the smoothly paved streets in the white-wing area two or three times each week, amounting to about 1,741,000 square yards.

During the cooler portions of the year two gangs of squeegeeing machines, each composed of 1 sprinkler and 3 machines, were operated whenever the weather permitted, each street in the squeegeeing section being washed about every three days. During the summer months, one of these two gangs was worked double shift and the interval of cleaning reduced to about once every two days. As a result of this frequent washing, there has been practically no complaint of dust, the white wings removing all coarser particles of dirt and the intervals between washings being too small to permit any accumulation of dust or the scum which makes the pavement so slippery when slightly wet.

*Dust prevention.*—The coating of practically all unpaved suburban streets with emulsion road oil, the entire area being covered about 10 times. The first part of the season two spreader wagons and three supply wagons were used, but as the oil accumulates on the streets less oiling is necessary and the force was cut down to 1 spreader and 2 supply wagons and the interval between oiling lengthened.

#### GENERAL.

The division of street cleaning serves a population of about 331,000 and covers an area of approximately 70 square miles.

The acts of Congress making appropriations for the expenditures of the District of Columbia, for the fiscal year ending June 30, 1913, allowed \$265,000 for dust prevention, cleaning streets and alleys, and snow removal. The previous appropriation had been \$260,000, but a separate appropriation of \$10,000 had been made for snow removal. This reduction in the amount available for street-cleaning work necessitated the strictest economy, particularly so, as the winter of 1912-13 proved to be very mild and it was possible to work full force nearly every day, adding materially to the cleanliness

of the city but causing expenditures far in excess of those generally incurred for street cleaning during the winter months. For the same reason, no material increases in territory could be made, only normal increases, due to newly paved streets and alleys being added to the territory previously under attention. The records of area cleaned, however, show a considerable increase over the figures for the previous year.

As a result of experiment, it was found that hand-patrol work, in connection with street washing, gave much better results than machine sweeping. The policy of the division, therefore, has been to add, whenever possible, to the white-wing and washing territory, correspondingly reducing the machine sweeping.

Since the general practice of street sprinkling was discontinued, in the fall of 1911, various road oils and patent preparations for dust laying have been experimented with. At the present time but two different preparations are used by this division. In an effort to ascertain which is the better, certain territory has been laid aside for strictly experimental purposes and in this area adjacent sections treated with each preparation. This territory includes streets on which heavy hauling is done, those on which considerable automobile traffic is experienced, as well as some having little traffic. In addition, streets of various composition, ranging from dirt to macadam, were selected, and careful records are being kept of the cost in each individual case. It is hoped, by the end of the present oiling season, to be able to definitely state which preparation is the better under the various conditions and in the future to use that preparation best adapted to the particular conditions.

Late this spring, four motor cycles were purchased for the use of the various street-cleaning foremen and it was found that greatly increased efficiency resulted from their use, the foremen being able to get over their sections quicker than with bicycles. In some cases the daily mileage covered amounts to as high as 80 miles, the miles of pavement in the section amounting to about 33. By equipping 3 of the white-wing foremen with motor cycles, it has been found possible to so rearrange the territory as to eliminate 1 foreman; 3 men with motor cycles and 2 with bicycles doing the work previously done by 6 inspectors with bicycles and each individual street being visited oftener than was possible with the old arrangement. It is believed that by equipping 1 additional man with a motor cycle, still another change can be made which will eliminate the need of the fifth foreman and it will be possible for the 4 men equipped with motor cycles to do better work than was possible with 6 when equipped with bicycles. The fourth motor cycle has been used on a machine-broom section, and the foreman found that it was possible for him to give closer attention to the inspection of the work done, particularly in following the carts to the dumps and seeing that the broomers were efficiently doing their work. Just previous to the close of the year, and as a result of this experiment, a further change was made in the method of working, and a foreman with a horse and buggy given charge of 6 machine brooms and 2 sprinklers, a second foreman with motor cycle being given charge of the broomers and carts for removing the dirt. As the 6 machines are generally working close together and the men not allowed to trot their horses, it is possible for a foreman with a buggy to closely observe the work done by the brooms. The foreman with a motor cycle, being able to cover more ground, can easily take care of the additional carts and broomers, and by following the carts to and from the dumps and keeping after the broomers, increased efficiency is expected, with reduced cost, in sweeping up and removing the dirt swept to the gutters by the machine brooms.

In the appropriations for the fiscal year ending June 30, 1912, an item of \$128,600 was appropriated for the purchase of a site or sites for the erection of a building or buildings thereon for a stable and storeroom for the street-cleaning division. Such a site was purchased and a stable erected during the previous fiscal year, and the old stable in square 367 was completely remodeled and brought up to date. The balance of this appropriation was expended during the past fiscal year in the construction of corrugated-iron sheds at the stable in square 1043. The balance available was insufficient to completely encircle the open court in this square, but a contract was let for \$4,598 to cover the construction of sheds along the east and south sides. An additional appropriation is being asked for in the estimates for the next fiscal year to cover the completion of these sheds and also the paving of the central court, this, at present, being dirt.

The repair shop at the southeast stable, in addition to the regular repair work, has built several carts and wagons during the past year for the use of the division, embodying the ideas of the street-cleaning organization, at a cost comparing favorably with those purchased on the open market. A number of experiments have been made and a cart developed having a capacity equal to the old style but of considerably less height. The policy of extensive repairs has always been carried out in the street-cleaning division, and equipment purchased years ago is still in daily use on the street, parts having been replaced as wear and tear demanded.

Complaints have been received, from time to time, regarding the condition of isolated suburban alleys. In the majority of cases these are found to be ungraded, unpaved, only partly defined by fences, and in numerous cases without the curbs being lowered to admit traffic. The rubbish found in such alleys is very seldom the result of traffic, but is a gradual accumulation of filth from the neighboring premises. At the present time the appropriation is not sufficient to take care of such public spaces, and in the estimates for the fiscal year ending June 30, 1915, an estimate has been made for cleaning such public property, the number taken care of depending on the amount of the appropriation.

The cost-keeping system developed during the previous fiscal year has been simplified during the year just past and it is thought to be in practically a perfected state at the present time. The cost-keeping accounts show a balance of \$276.39 over the accounting. This error is, no doubt, due to the use of a slide rule in determining most of the cost-keeping amounts, but the error is positive and only amounts to 1 in 1,900.

A cost-keeping card has been developed which is issued to each foreman, each month, and shows the cost for his gang during the previous month. These cards are arranged so as to give six months costs on one card, these being turned in monthly and the new costs added. A letter calling attention to variations from previous costs is sent with the card each month. Considerable interest has been displayed by the foremen in the figures given on the card and increased efficiency is expected by giving each man a record comparable with those of similar gangs and pointing out in what particular his work has fallen behind or exceeds that of previous months.

The unit costs for the fiscal year 1913 are practically the same as those for last year, in spite of the fact that the cost of forage was more than previously. The effect of this is shown in the squeegee work where the cost of the horses used is large in comparison to the other items of expense. The hand-patrol work shows an increase which is due almost entirely to a new method of figuring the area cleaned. In previous years, on a rainy day, the white wings were credited with having cleaned their entire area even if only two hours work was done. Under the present system, in the case of two hours work, only one-quarter of this area is credited. The effect of this change amounts to 38,082,000 square yards, which, if added to the area credited to the white wings, would reduce the unit cost materially. Flushing-unit cost decreased principally on account of a change of method in working, the present gang consisting of three machines instead of two, as was formerly the case. This change is the result of experiments by which it was found that for most Washington streets, the three-machine combination was able to flush the streets from the center to the curb at one operation.

A new time book has been designed which, by means of a duplicating device, the original foremen's records are now sent to the office and the pay roll made up from this original record. As a result of this change, over one-half the time of one clerk is saved, the pay rolls gotten out almost a day sooner, and practically all disputes between the office and foremen relative to the amount due their men have been eliminated.

The inspectors of the collection and disposal of city waste made investigations during the year of complaints and requests, in number, as follows: Garbage, 693; ash, 1,196; and refuse, 2,985. Of the total garbage complaints, but 38, or 5½ per cent, were found on investigation to be the fault of the contractor; 266, or 38.4 per cent, were found to be the result of violations on the part of the householder of the police regulations regarding the disposal of refuse, while in 389 cases, or 56.1 per cent, the fault could not be definitely placed. In the case of ashes, but 115 complaints, or 9.6 per cent, proved to be the fault of the contractor; 802, or 67 per cent, are chargeable to the failure on the part of the householder to observe the regulations, principally regarding accessibility, while 279, or 23.4 per cent, are classed as doubtful. In the refuse service, 730 complaints, or 24.5 per cent, were found to be the fault of the contractor, 836, or 28 per cent, the fault of the householder, while 1,419, or 47.5 per cent, were classed as doubtful. For the inspection of the disposal of city waste, including garbage, ashes, refuse, dead animals, and night soil, there are only 5 inspectors. It is manifestly impossible for them to supervise the collection of every class of city waste at every house. Inspection can only be made in a general way, information obtained as to whether each wagon is on its regular route on the schedule day, special attention being given to those which are or likely to be behind, and complaints investigated. The investigation being made after the cause of the complaint, it is usually difficult to ascertain whether the fault was the servant's or householder's, in not making the proper separation or the waste accessible, or that of the collector.

The contracts for the collection and disposal of night soil and for the collection and disposal of ashes and refuse, from public buildings under the control of the commissioners, expired on June 30, 1913. New contracts were entered into to continue this

work, Mr. Warner Stutler again securing the night-soil contract for a period of five years, at \$15,000 per annum. Mr. James W. Bean succeeds Warner Stutler as the contractor for the removal of ashes and refuse from public buildings under the control of the commissioners, this contract being for a period of one year, at 41 cents per cubic yard, with the privilege of renewal for another year at the same rate.

The contracts for the collection and disposal of garbage, ashes, refuse, and dead animals are all five-year contracts and expire June 30, 1915. With a view to obtaining less objectionable, more efficient, and more economical services than are at present rendered by the contractors, the commissioners have, for two years past, recommended to Congress that an appropriation of \$10,000 be made for the purpose of investigating and reporting on the collection and disposal of city waste, including the preparation of plans and specifications for the construction of disposal plants. Congress has not seen fit to make this appropriation, but the recommendation has been renewed in the estimates for the coming year.

It is estimated that the contractors for the disposal of city waste have invested in collecting equipment and disposal plants several hundred thousand dollars which they must have figured on recovering from the amounts received from the District of Columbia, for the services rendered during the five-year term of their contracts, as these investments will be practically valueless on their expiration if they are not successful in obtaining the same contracts for the next term of five years. In other words, the District of Columbia is probably paying to the contractors, in addition to the cost of the work and the contractor's profit, the cost of complete disposal plants and collection equipment every five years, whereas the disposal plants, if owned by the District, would probably have a life of 40 or 50 years. It is believed that the District of Columbia should, at least, own the disposal plants, which could be operated by the District and the collection of city wastes could be let to contractors or the whole service could be let by contract on the basis of the contractors leasing the disposal plants from the District of Columbia.

Under the present system, the collections of garbage, ashes, and dead animals are practically perfect. The collections of miscellaneous refuse have not been so good but this service is improving rapidly. This division has received a great many complaints in regard to the garbage transfer station and the dump at the miscellaneous refuse disposal plant. These complaints, however, do not arise from any fault of the contractor as he is living up to the requirements of his contract. In order to satisfy the complaints, a complete new arrangement will have to be perfected, which is one of the reasons for requesting the appropriation mentioned above.

Your attention is invited to the detailed information and statements of appropriations and expenditures submitted herewith.

Very respectfully,

J. W. PAXTON,  
*Superintendent of Street Cleaning.*

Capt. MARK BROOKE,  
*Corps of Engineers, United States Army,  
Assistant to the Engineer Commissioner, District of Columbia.*

#### FINANCIAL STATEMENT, STREET-CLEANING APPROPRIATIONS, FISCAL YEAR 1913.

"Streets, District of Columbia, 1913; cleaning, etc.":

##### Pay rolls—

Hand cleaning.....	\$100,275.43
Machine cleaning.....	22,848.15
Suburban street cleaning.....	12,598.72
Alley cleaning.....	12,975.48
Squeegee cleaning.....	4,368.50
Flushing.....	1,255.64
Sprinkling.....	121.21
Oiling.....	1,295.58
Dumpmen.....	3,235.25
Office work.....	1,200.01
Stable.....	16,169.22
Repair shop.....	17,085.57
Snow and ice.....	50.00

##### Operating expenses—

Office.....	346.81
Rent of storage rooms.....	302.06
Rent of temporary stables.....	372.16
Livery, inspectors' horses.....	1,570.00
Oil for roads.....	11,276.53

"Streets, District of Columbia, 1913; cleaning, etc."—Continued.

Operating expenses—Continued.

Hire of extra teams.....	\$1, 043. 50
Electric light and power.....	708. 12
Repair material and supplies.....	13, 962. 09
Forage.....	32, 032. 11
Stable supplies.....	2, 103. 45
Equipment.....	9, 470. 77
Unexpended balance.....	92. 36

Total..... \$266, 758. 72

Repaid from other appropriations—

"Contingent and miscellaneous expenses, District of Columbia, 1913, sweeping B Street".....	480. 00
"Improvements and repairs, District of Columbia, 1913, repairs to streets".....	1, 242. 96
From Washington Ry. & Electric Co., snow and ice work.....	23. 91
From Capital Traction Co., snow and ice work.....	11. 85

Total amount repaid..... 1, 758. 72

Amount of appropriation..... \$265, 000. 00

"Streets, District of Columbia, 1913, disposal of city refuse"—

Garbage.....	68, 388. 00
Ashes.....	73, 129. 00
Refuse.....	16, 593. 00
Night soil.....	16, 600. 00
Dead animals.....	2, 855. 00
Livery, inspectors' horses.....	1, 080. 00
Office expenses.....	72. 70
Salaries.....	782. 50
Balance, fines, \$440; unexpended, \$4.80.....	444. 80

Amount of appropriation..... 179, 945. 00

Removal snow and ice:

Pay rolls.....	871. 60
Unexpended balance.....	1, 352. 60

Balance of appropriation by act of Congress, Feb. 9, 1907..... 2, 224. 20

"Contingent and miscellaneous expenses, District of Columbia, 1913, street-cleaning allotment":

Office expense.....	482. 72
New equipment.....	281. 95

Amount of appropriation..... 764. 67

"Salaries, offices, District of Columbia, 1913":

Amount expended.....	41, 032. 31
Unexpended balance.....	147. 69

Amount appropriated..... 41, 180. 00

Total amount of appropriations..... 489, 113. 87

*Material removed by various classes of work.*

	Wagon-loads.	Cart-loads.	Cubic yards.	Tons.
Machines.....		14, 632	29, 264	14, 632
Alleys.....		5, 199	7, 799	5, 199
Suburban.....		11, 313	11, 313	11, 313
Hand patrol.....	9, 231		36, 924	18, 462



*Material removed by various classes of work—Continued.*

Class of work.	Average force per working day of 8 hours.								Days worked.	
	Carts.	Wagons.	Sprinklers.	Machines.	Squeegees.	Flushers.	Teams.	Men.	Calendar.	Actual.
Machines.....	16.9	-----	4.0	12.4	-----	-----	0.1	53.5	270	261.3
Alleys.....	9.5	-----	3.0	1.9	-----	-----	-----	33.1	267	251.5
Suburban.....	8.2	-----	.2	.2	-----	-----	.7	34.4	247	237.6
Hand patrol.....	-----	14.4	-----	-----	-----	-----	-----	249.1	290	275.4
Flushing.....	-----	-----	-----	-----	-----	3.1	-----	3.1	262	243.3
Squeegee.....	-----	-----	2.4	-----	7.4	-----	.7	9.8	267	250.0
Sprinkling.....	-----	-----	1.3	-----	-----	-----	-----	1.3	83	66.0
Oiling.....	-----	-----	5.1	-----	-----	-----	-----	5.5	100	90.6
Snow and ice.....	-----	-----	-----	-----	-----	-----	-----	331.8	2	1.7

*Table showing comparative data in connection with street-cleaning work from 1909 to 1913.<sup>1</sup>*

## SQUARE YARDS CLEANED.

	1909	1910	1911	1912	1913
Hand patrol.....	500,549,957	543,088,777	536,897,423	646,377,000	766,918,000
Machine sweeping <sup>2</sup> .....	453,052,163	435,397,855	367,242,484	337,990,000	286,067,000
Alley cleaning <sup>2</sup> .....	51,782,270	50,532,192	38,396,138	54,664,000	61,354,000
Suburban streets <sup>2</sup> .....	36,067,409	39,683,516	40,194,274	27,825,000	43,595,000
Squeegees.....	-----	-----	50,012,859	98,328,000	144,629,000
Flushing.....	-----	-----	5,589,367	8,747,000	20,703,000

## DIRECT TOTAL COST.

	1909	1910	1911	1912	1913
Hand patrol.....	\$93,280.73	\$96,610.13	\$94,134.48	\$98,132.85	\$117,980.15
Machine sweeping <sup>2</sup> .....	103,069.35	99,053.02	83,547.67	54,623.72	46,088.96
Alley cleaning <sup>2</sup> .....	20,712.91	20,212.85	15,358.44	17,752.45	19,908.48
Suburban streets <sup>2</sup> .....	17,640.36	17,437.01	17,006.26	14,559.76	18,552.80
Squeegees.....	-----	-----	5,814.57	9,407.58	17,026.64
Flushing.....	-----	-----	1,765.12	2,385.84	5,148.78

## DIRECT COST PER 1,000 SQUARE YARDS.

	1909	1910	1911	1912	1913
Hand patrol.....	\$0.1863	\$0.1778	\$0.1753	\$0.152	\$0.154
Machine sweeping <sup>2</sup> .....	.2275	.2275	.2275	.162	.161
Alley cleaning <sup>2</sup> .....	.40	.40	.40	.324	.325
Squeegees.....	-----	-----	.1162	.096	.117
Flushing.....	-----	-----	.3157	.272	.248

<sup>1</sup> Changes and improvements in methods of measuring and distribution prevent exact comparison between the figures for different years.

<sup>2</sup> Previous to 1912 this work was done by contract.

*Table showing comparative data in connection with disposal of all city wastes from 1909 to 1913.*

## NUMBER OF UNITS COLLECTED.

	1909	1910	1911	1912	1913
Garbage.....tons..	45,069	44,236	48,214	47,445	50,778
Ashes.....cubic yards..	120,792	162,272	171,361	203,568	200,430
Miscellaneous refuse.....do..	71,508	72,060	108,789	115,378	138,382
Night soil.....barrels..	23,894	26,280	23,834	21,266	19,895
Dead animals.....animals..	17,993	18,875	16,720	17,492	21,287

## TOTAL NET COST.

	1909	1910	1911	1912	1913
Garbage.....	\$78,376.00	\$78,396.00	\$68,400.00	\$68,384.00	\$68,388.00
Ashes.....	65,098.40	65,852.40	73,111.00	73,053.00	73,129.00
Miscellaneous refuse.....	15,676.00	15,654.00	14,934.00	16,560.00	16,593.00
Night soil.....	16,486.00	15,984.00	16,272.00	16,600.00	16,600.00
Dead animals.....	2,358.80	2,360.80	2,855.00	2,855.00	2,855.00

Table showing comparative data in connection with disposal of all city wastes from 1909 to 1913—Continued.

## COST PER UNIT.

Garbage.....ton	\$1.74	\$1.77	\$1.41	\$1.44	\$1.34
Ashes.....cubic yard	.53	.40	.42	.36	.36
Miscellaneous refuse.....do.	.22	.21	.14	.14	.12
Night soil.....barrel	.68	.60	.68	.78	.83
Dead animals.....animal	.131	.126	.170	.163	.134

## FINES DEDUCTED.

Garbage.....	\$24.00	\$4.00	.....	\$16.00	\$12.00
Ashes.....	946.00	192.00	\$39.00	97.00	21.00
Miscellaneous refuse.....	324.00	346.00	2,066.00	400.00	407.00
Night soil.....	14.00	516.00	328.00	.....	.....
Dead animals.....	2.00	.....	.....	.....	.....

*Specifications for the collection and disposal of ashes, garbage, dead animals, night soil, and miscellaneous refuse in the District of Columbia, and for the removal of ashes and refuse from buildings under the control of the commissioners.*

[Work done under supervision of street-cleaning division.]

1. *Definitions.*—The term “garbage” wherever it occurs in these specifications means all refuse of animal and vegetable matter which has been used as food for man (except oyster and clam shells from business places) and all refuse animal and vegetable matter which was intended to be so used, and includes food condemned by the health department. The term “dead animals” means all dead animals, or parts thereof, not intended to be used as food for man. The term “night soil” means the contents of all privies (except such as are established by contractors on construction work), and human fecal matter deposited on streets, alleys, avenues, roads, and open lots. The term “miscellaneous refuse” means all refuse from places of residence and business, except garbage, dead animals, night soil, and ashes. In addition to the ordinary household rubbish it will be held to include discarded Christmas trees and greens and small branches from shrubs or vines, but will not include any material whatever in the nature of earth or sand, wall paper, lumber, brick, stone, plaster, or other substance that may accumulate as the result of building operations or repairs to yards and buildings. Manure is not included under any of the above classes of material. The term “ashes” will be held to mean ashes from coal and other fuel and will include such mineral substances as fallen plastering, etc., as may accumulate in connection with the ordinary conduct of dwellings and places of business, but not such as may accumulate as the result of building operations.

2. *Hours of collection.*—Garbage, night soil, miscellaneous refuse, and ashes must be collected between 7 o'clock a. m. and 6 o'clock p. m.; dead animals must be collected between 6 o'clock a. m. and 9 o'clock p. m. Special collections at other hours may be authorized by the commissioners, and may be required by them whenever in their judgment they are necessary.

3. *Receptacles.*—Garbage intended for collection will be deposited by householders in water-tight covered vessels which can easily be handled by one man; ashes and miscellaneous refuse intended for collection will be deposited by householders in receptacles suitable for that purpose and which can easily be handled by one man. All receptacles aforesaid will be placed at points accessible to collectors. In the case of hotels, apartment houses, markets, etc., larger receptacles will be allowed under such restrictions as the commissioners may determine. In the event of dispute between citizen and contractor as to the point at which the garbage, ashes, or miscellaneous refuse shall be placed for collection the case shall be referred to the superintendent of street cleaning, whose decision shall be binding upon the contractor. Night soil intended for collection will be placed by householders in box privies constructed in accordance with the law. For the details of the construction of such privies attention of bidders is invited to an act entitled “Act to regulate, in the District of Columbia, the disposal of certain refuse, and for other purposes,” approved January 25, 1898.

4. *Defining accessibility—Provisions for failure to remove.*—The term “accessible to collectors” in the foregoing paragraph (No. 3) of these specifications shall be held to mean the placing of the receptacles by the householder inside of and near to the side or rear entrance of the premises (if collections are made from the side or rear) and in

the areaway or other convenient place in front of said premises (if collections are made from the front), and the unfastening of the gate or other approach to the premises upon due warning by the collector by the free use of his horn, gong, or other signal. No receptacle will be allowed on the sidewalk, street, or public alley, and if the house or building has no yard or areaway large enough to hold the receptacles containing what accumulation is made between the regular collection days without unduly blocking the free passage through such areaway, collection must be made from within said house or building, provided entrance be afforded by a previously unlocked gate, door, or window. Nothing in these specifications shall be held to compel the contractor on his regular collection day to stop at any premises where the gate or other entrance thereto is found locked at the time of his arrival, nor to wait for said entrance to be opened, nor to notify the householders of his presence by any other means than the free use of his horn, gong, or other signal: *Provided, however*, That where, through failure by any cause of his own, the contractor does not remove ashes, garbage, or miscellaneous refuse on his regular collection day, such material must be collected the next succeeding day, if so desired by the householder, from each and all of the premises neglected, whether the said material is made accessible or not in the meaning previously defined in this paragraph.

The fact that the contractor so removes the neglected material the day following the regular time of collection shall not be held to release him from liability for liquidated damages incurred by such neglect, except where the streets on the regular collection day are, in the opinion of the superintendent of street cleaning, in such condition as to excuse such neglect.

5. *Removal from street, etc.*—Each contractor for the removal of any class of material named in paragraph 1 of these specifications, which is ordinarily kept in receptacles on the premises of the householder, must under such exceptional circumstances as in the opinion of the superintendent of street cleaning render it necessary, and upon his order, remove such material from any public street, avenue, alley, or road, or from any vacant lot, park, or unclosed land.

6. *Mixed material.*—The commissioners will enforce the separation by householders of each class of material named in paragraph 1 of these specifications, so far as may be practicable. But whenever, through neglect on the part of a householder or otherwise, two or more classes of such materials have been deposited in the same receptacle or place, the collection contractor affected, when such mixed material is refused by his collector, must notify the householder on whose premises the mixed material is found and request said householder to have such material separated in accordance with the police regulations of the District of Columbia; in the event of the householder refusing so to do, the contractor must forthwith, in writing, notify the superintendent of street cleaning, giving the name and address of the householder. Whenever in his opinion it becomes necessary said superintendent shall determine by which contractor or contractors, if any, the material in question shall be collected and disposed of, and such contractor or contractors must collect and dispose of such material.

7. *Unlawful receptacles—Frozen material.*—Lawful receptacles for ashes, garbage, and miscellaneous refuse will be found defined as to size and nature in the police regulations of the District of Columbia. No person shall deposit ashes for collection in any receptacle having a capacity of less than 5 nor more than 24 gallons. If material is found in unlawful receptacles the collector may refuse to collect the same, unless the use of such unlawful receptacles has been necessitated by the collection contractor's neglect (see par. 8) or authorized by the superintendent of street cleaning; but if such material is refused, the householder must be notified and the reason for such refusal must be explained to him by the contractor. If, upon the next regular collection day, lawful receptacles have not been provided, the contractor for collection must notify the superintendent of street cleaning forthwith, in writing, giving the name and address of the householder at fault.

The said police regulations instruct householders to keep garbage free from dish-water and as dry as practicable, to have both ash and garbage receptacles covered when awaiting collections so as to prevent animals from getting at their contents, to keep out rain, and to obviate freezing as far as possible. When garbage or ashes are found in frozen condition, the collector for such class of material shall not refuse to collect same without notification to the householder, and if said householder is willing that the collector shall attempt to loosen such frozen material and releases the collector from any unavoidable damage done to the receptacle in such attempt, said collector must remove such frozen material. Where the householder is not willing to release the collector from unavoidable damage in loosening the contents of the receptacle, and the material is refused, the contractor for the collection of such material must notify the superintendent of street cleaning of such refusal forthwith, in writing, giving the name and address of the householder on whose premises the frozen material is found;

provided, however, that nothing in this or the preceding paragraph shall be held to release the contractor or contractors for collection from liability for liquidated damages incurred by neglect where material has been refused from any cause whatever (except inaccessibility), unless such refusal is reported in writing forthwith to the superintendent of street cleaning, as herein provided for.

8. *Accumulation.*—Householders are required to provide sufficient receptacles for each class of material to contain all of such material accumulating on the premises between the regular collection days. The contractor shall, on demand of the householder or the superintendent of street cleaning, collect all of such material, whether the same be in lawful receptacles or not, whenever an accumulation results through his neglect, but he shall not be required to collect such material as may not be in lawful receptacles and due to the neglect of the householder.

9. *Receptacles, and damage to same.*—The contractor for the collection of garbage must provide each of his collectors with a water-tight bucket, said bucket to be used wherever possible in the transfer of garbage from the householder's receptacles to the contractor's collection vehicle.

All receptacles, whether for ashes, garbage, or miscellaneous refuse, shall be replaced in the position where found by the collector, shall be handled carefully, and if damaged by the carelessness of the collector such damage shall be made good by the contractor for collection.

10. *Obstruction of streets, etc.*—If any street, avenue, alley, or road be obstructed so that vehicles used for the collection of any material mentioned in paragraph 1 of these specifications can not pass into, over, or through the same, the contractor for the collection of such material must cause it to be removed to collection vehicles on the streets, avenues, alleys, or roads which are not obstructed.

11. *Warning signal—Manner of collection.*—The contractor for the collection of any material described in paragraph 1 of these specifications must see that each collector employed by him gives, in such manner as may be directed by the superintendent of street cleaning, timely notice to the householder of his approach, so that the material may be collected without undue delay. The contractor must see that no collector employed by him picks or sorts over material collected, and that it is transferred from the receptacles of householders to the vehicles used for collection, without unnecessary delay or exposure and without spilling. The contractor must see that each collector employed by him who opens a gate, door, or window leading to any premises properly closes the same before departing.

12. *Notices of collection days, etc.*—The contractor for the collection of garbage, or miscellaneous refuse, and of ashes, shall at his own expense issue cards, approved by the superintendent of street cleaning, stating the days for collecting such material in particular streets and districts, and designating as nearly as may be between what hours the collector will call in each locality; shall, before beginning work, cause one or more copies of such cards to be left at every building from which such material is to be collected, and whenever it is proposed to make any changes in the days or hours of collection, and prior to making such change, shall cause one or more copies of cards showing proposed time of collection to be left at each building affected by it.

The information as to collection days and hours required on the above cards must be supplemented by such quotations from the police regulations concerning the size and nature of receptacles, their accessibility, and the character of the separation of the various classes of material called for by such regulations as may be ordered in writing by the superintendent of street cleaning, and such other information as may be desired by the contractor and approved by the superintendent.

Where collections are made semiweekly, at least two days must elapse between collections; where made three times a week, at least one day must elapse between collections.

13. *Collection districts and map.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall, before commencing work, and thereafter at least two weeks before each change, if there be any, from summer to winter service, and vice versa, subdivide the entire area from which collections are to be made into collection districts of such size as, for the purposes of his contract, can be readily served under ordinary circumstances by one vehicle; shall assign to each collection district a number; shall furnish the superintendent of street cleaning with a map showing the boundaries of each district, the number assigned to it, and the collection days in it; and shall forthwith notify said superintendent, in writing, of any change in boundaries and numbers of such collection districts which may be made after such map has been furnished, and incorporate such changes on said map.

If said map is not furnished nor said notification given as herein provided, the superintendent of street cleaning shall withhold his certificate from the regular semi-monthly pay voucher until such map or written notice is received by him.

14. *Ownership of material.*—If a single contract be awarded for the collection and disposal of any material, all such material collected will be the property of the contractor from the time of its collection. If, however, separate contracts be awarded for the collection and for the disposal of any material, the contractor for collection will have no ownership in the material collected except as may be necessary to enable him to transfer the same; but must deliver all such material, without alteration or diminution, except such as may result from the use of disinfectants and deodorizers, to the contractor for disposal. Such material will be the property of the contractor for the disposal thereof after it has been delivered to him by the contractor for collection.

15. *Separate contracts for the collection and disposal and the transfer points.*—If separate contracts be awarded for the collection and for the disposal of any material, and it is desired by the latter contractor to dispose of any such material at some place not in or within convenient hauling distance from the city of Washington, and the commissioners consent thereto, the latter contractor must establish and maintain in or within convenient hauling distance from said city, such station or stations as in the opinion of the commissioners may be necessary for the reception and transfer of the material collected or delivered there, which latter stations must not be located at any place nor reduced in number nor changed in location without the consent of the commissioners.

16. *Incombustible residue—presenting mixed material.*—Where a contract is let for the disposal of any material or materials by burning, the driver for the District or for the collection contractor or any other person delivering such material or materials must not be kept waiting to empty, or after emptying his vehicle, or for any purpose whatever. If the material so presented is in its nature incombustible, or if it leaves an incombustible residue after burning, such material or residue must be disposed of by the contractor for disposal in a manner satisfactory to the commissioners.

If, however, material presented to any contractor for disposal is found to be mixed with any other class of material to the extent of 5 per cent or more, it may be refused by said contractor, if authorized so to do by the representative of the street cleaning division stationed at the place of reception, and the person delivering it may be required to separate said mixed material properly, or to remove it forthwith upon failure to do so.

17. *Dumps for ashes.*—If a contract be made for the collection of ashes and authorizing their disposal on such public dumps as may be controlled from time to time by the commissioners, the contractor for such collection and disposal shall provide his own safeguards at such dumping places and shall take such precautions as may be necessary to prevent accident. The commissioners will assume no liability for accidents resulting through the contractor's use of said dumping places. The superintendent of street cleaning shall station at such places a representative who shall have general supervision and control over the points at which dumping must be done, the time of opening and closing said dump, the prevention of all fires on the dump, the trimming and handling of all material, the persons permitted on the dump, and shall determine the character of such material as is presented for disposal. Only clean ashes will be accepted at such dumps, and the representative of the superintendent of street cleaning shall be empowered to refuse all ashes mixed with other materials brought to the dump and to require such mixed material to be separated or to order it removed forthwith. The contractor shall be bound to conduct the dumping in accordance with the directions of the superintendent of street cleaning and the contractor must comply with such directions.

18. *Time of disposal.*—Garbage, dead animals, night soil, miscellaneous refuse, and ashes must be within the digesting tanks, or within the furnace or otherwise in process of actual disposal, not later than 7 o'clock a. m. on the day following its delivery at the place of disposal. Such garbage, dead animals, and night soil must be completely disposed of within 24 hours and all miscellaneous refuse and ashes within 72 hours after such delivery. The capacity of any plant or method established by any contractor must be sufficient to enable necessary repairs to be made without interfering with the work of disposal.

19. *Transportation.*—Arrangements for transportation and the method of disposal must be such that regular daily disposal will not be interrupted by reason of (1) the obstruction of the Potomac River by ice or otherwise, (2) the effect of bad weather on roads, (3) inadequate railway facilities.

20. *Lost articles.*—Articles of special value found in the material or on the dead animals collected must be kept by the contractor for the disposal of such material or dead animal, in his office, for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A list of such articles shall be forwarded daily to the superintendent of street cleaning, describing each article found since the preceding

report, and showing the collection district from which it came, the name of the finder, and such other information as may be of assistance in discovering the owner.

21. *Plant.*—Each contractor must establish and maintain, without cost to the District of Columbia, beyond the price stated in his proposal or proposals, all such wharves, boats, cars, vehicles, buildings, furnaces, boilers, driers, presses, and other devices and apparatus as may be necessary to enable him to perform the work specified in his contract or contracts.

22. *Covered conveyances.*—Material collected under these specifications must be transported by the contractor or contractors within the District of Columbia in covered conveyances satisfactory to the commissioners.

23. *Collection vehicles.*—Vehicles used by the contractor for the collection of any class of material other than dead animals described in paragraph 1 of these specifications must be uniform and have capacities in exact multiples of 1 yard, except as otherwise authorized in writing by the commissioners. Such vehicles must be so constructed as to be loaded and unloaded and to carry their contents without offense to the public. They must be strongly built, must be plainly numbered on both sides and marked with the name and address of the collection contractor, and must be kept in good repair, well painted, thoroughly cleaned, and free from odor at all times.

24. *Care and use of garbage receptacles, vehicles, etc.*—Every receptacle used by the contractor for the collection of garbage, whether tank, can, barrel, or the body of a cart or wagon, must be metal, water-tight, strongly built, provided with a close-fitting metal or other tight-fitting cover satisfactory to the commissioners, and have a capacity of not less than 30 gallons. The cover, if made of metal, must be equipped with rubber or other pads to effectually prevent rattling and, together with the body of the receptacle, must be thoroughly washed inside and out once each 24 hours; if furnished by the contractor for disposal, this washing must be performed by said contractor.

Every vehicle used for the collection of miscellaneous refuse and for the collection of ashes must be so constructed as to prevent the escape of its contents during the process of transportation and must be covered with canvas or other cover. When in motion on streets and avenues, it must be tightly closed or covered, so that its contents are not exposed to view, and while being filled it shall not be uncovered for a longer time than is necessary, and every reasonable precaution must be used in transferring the contents of the householders' receptacles to prevent ashes and rubbish from blowing about.

25. *Animals.*—None but strong, serviceable horses or mules shall be used in connection with any work performed under these specifications, and ill treatment or neglect of same will not be permitted.

26. *Inspection of vehicles.*—Each contractor must present all vehicles used by him for inspection at such times and places as may be designated by the commissioners.

27. *Collection of dead animals.*—The contractor for the removal of dead animals will be required to remove them promptly as they may be found and reported to him. The commissioners will, however, assume no responsibility for the correctness of such report as may be made by any employee in the service of the said District, and the contractor for the removal of dead animals shall not charge for, nor can he collect from said District, any loss or losses incurred in responding to notification for the removal of a dead animal where said animal has, prior to such contractor's arrival, been removed by some other person or where the owner of such animal refuses to consent to its removal. Each dead animal must be removed skillfully and without offense and transported in a closed vehicle to the place of disposal. Removal must take place, May to September, inclusive, within 6 hours, and from October to April, inclusive, within 10 hours after receipt of notification by the contractor by telephone or otherwise, or forthwith if directed to do so by the superintendent of street cleaning, and in the event or neglect so to remove the commissioners may perform such removal and charge the expense thereof to the contractor and may deduct and retain the cost thereof out of the moneys due or to become due to the contractor under this contract.

29. *Disinfectants.*—The contractor shall keep his plant and equipment disinfected in such manner and by the use of such disinfectants as the commissioners may direct.

30. *Collection of rubbish with other material.*—If miscellaneous refuse is collected by the contractor for the collection of any other class of material, at the same time and with the same horses, men, and vehicles as are used for the collection of such other material, such miscellaneous refuse must be kept entirely separate and distinct from such other material, inclosed in tight sacks or other approved covered receptacle, or in a part of the vehicle partitioned off from the rest of, or in racks placed above, said vehicle, and such sacks or other receptacles must not be hung from the sides or body of the vehicle and must be so closed that their contents can not escape during the process of collection and transportation. Such method of combined removal shall not be put into effect without the consent and approval of the superintendent of street cleaning.

32. *Dismissal of employees.*—If an employee of a contractor use improper language or be under the influence of liquor while on duty, or accept or demand pay from citizens for service rendered, or falsify any report he may be called upon to make, or do any other act which in the opinion of the superintendent of street cleaning is inimical to the proper and efficient prosecution of the contract, the contractor by whom he is employed shall, upon demand, at once discharge such employee from his service, and shall forthwith furnish such employee's full name and the nature of the work performed by him to the superintendent of street cleaning. No contractor under these specifications shall employ, on any work under his contract, any person who has been discharged under the foregoing requirements.

33. *Reports by contractor.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall make daily reports to the superintendent of street cleaning, on blanks approved by him, which reports shall show the number of each collection district, the number of each vehicle employed therein, and the number of full loads and parts of loads, and the weight of each, or, in the case of dead animals, the number and species collected. Such reports shall show also the number of men and of horses employed each day with each vehicle. The contractor must also furnish to said superintendent, daily, a complete list of all failures on his part to comply with the requirements of his contract which have come to his notice during the preceding day, and the reason for such failure. The contractor for the collection on and the contractor for the disposal of any material aforesaid shall furnish in writing such information in reference to the conduct of work under his contract as may be required from time to time by said superintendent or by the commissioners. If such information is not supplied within two weeks from the date of request for the same, the commissioners may, in their discretion, retain such money or moneys as may be due said contractor until he has supplied the information requested.

34. *Other business.*—No contractor shall, without the written consent of the commissioners, engage in the collection or in the disposal of any material otherwise than as provided in such contract; nor shall he use any vehicle intended for the public collection of refuse of any sort under these specifications for any other purpose, except with the written consent of the commissioners.

35. *Telephone and visits.*—The contractor for the collection and the contractor for the disposal of any material mentioned in paragraph 1 of these specifications shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense. The contractor for the collection of any such material shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent, at such times as the superintendent or the commissioners may direct. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by any of the contractors under these specifications.

36. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

37. *Liquidated damages.*—If the contractor fail at any time or times to promptly and properly collect, receive, or dispose of material or any part thereof, duly offered to him, as required by the contract, the commissioners shall have the right to perform such work, from time to time, and charge the expense thereof to the contractor, and deduct the same, from time to time, from any money or moneys due or to become due to him under the contract. It is hereby understood and agreed that the District of Columbia will be damaged by such failure or failures upon the part of the contractor in addition to the cost to the District of Columbia of doing said work, if done by the commissioners; that the amount of said damage is difficult, if not impossible, of definite ascertainment and proof; and it is hereby agreed that the amount of such damages exclusive of said cost shall be estimated, agreed upon, liquidated, and fixed in advance, and they are hereby agreed upon, liquidated, and fixed at the amount of \$2 for each such failure to collect garbage, night soil, or dead animals or ashes and refuse from buildings under the control of the commissioners, and the sum of \$1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the contractor hereby agrees to pay to the District of Columbia as such liquidated damages, and not by way of penalty, the said sum of \$2 for each such failure to collect garbage, night soil, or dead animals, or ashes and refuse from buildings under the control of the commissioners, and the sum of \$1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the amount or amounts of said sums which may become due to the District of Columbia, by the contractor, for



liquidated damages, may be deducted from any money or moneys due or to become due to him under the contract. Nothing contained in this paragraph shall be so construed as to affect in any manner the rights of the commissioners to annul this contract or to suspend the contractor for any cause as provided by paragraph 43 of the specifications.

38. *Employment of inspectors at expense of contractor.*—Ordinarily inspectors will be employed by the commissioners. If, however, on account of any apparent disregard by any contractor of the requirements of his contract, additional inspectors are, in the opinion of the commissioners, required, such inspectors will be employed by said commissioners in such number as they may deem necessary, and will be compensated by said commissioners at a rate not to exceed \$4 per diem each, which compensation will be charged to the contractor for the supervision of whose work such inspectors have been employed and deducted from any money due or which may become due to him.

39. *Payments.*—Payments, except those for hauling ashes and refuse from buildings under the control of the commissioners, will be made semimonthly by checks of the disbursing officer of the District of Columbia, the payment for the first half of each month to be in the nature of a payment on account, and the amount of such payment shall not exceed one-half of the amount due for the entire month. Payments for each entire month shall be one-twelfth part of the per annum contract price, less the amount paid on account for the first half of said month.

40. *Bond.*—Good and sufficient bond with sureties or a surety company satisfactory to the commissioners will be required from each contractor conditioned for the faithful performance of the contract; that the contractor will be responsible for all claims for damages to persons, property, or premises arising by reason of the operation of any equipment or plant of the contractor, or the negligence of the contractor, his agents, servants, or employees engaged in the work under the contract, or in consequence of any negligence in carrying on the work under said contract, or by or on account of any act or omission of the contractor, his servants, agents, or employees, and that the contractor will promptly make payment to all persons supplying him with labor or material in the prosecution of the work provided for in the contract. The penalty of this bond will be equal to the specified or estimated annual amount of the contract, and if the estimated annual amount of the contract is less than 25 per cent of the total contract price covering the entire term through which the said contract is in force, the penalty of the bond will be 25 per cent of said total contract price.

41. *Transfers.*—No contract or any interest therein shall be transferred by the parties to whom the award is made, and any such transfer will be null and void.

42. *Patents.*—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

43. *Failure.*—If the contractor fails to commence the work at the time specified for its commencement, or fails to prosecute the work to the satisfaction of the commissioners, or attempts to transfer or assign his contract or any interest therein, or fails to perform any of the covenants of the contract, the commissioners, on 36 hours' notice in writing, may annul the contract or contracts affected by such failure or attempted transfer or assignment; or, on such notice, the commissioners may at their election suspend the contractor from the work, and in case of such suspension may at their further election enter upon, perform, and complete said work embraced in the contract, or may employ some other person or persons to do so, or may perform part of said work and employ others to do the remainder. In case of such suspension the commissioners shall have the further right, at their election, to take possession of without legal process, and to use such reasonable force and means as may be necessary to take possession of the plant and equipment used by the contractor upon the work and to use the same in doing the work, without compensation for such use, license so to do being hereby given by the contractor, and the contractor hereby forever releases and discharges the commissioners and the District of Columbia from any and all damages or injuries which may be sustained, suffered, or claimed by reason of such possession and use of said plant and equipment.

All cost, damage, expense, and money expended or incurred by the Commissioners of the District of Columbia by reason of such failure of the contractor and the cost of completing said work shall be charged against and paid by the contractor, and any money due or to become due him under the contract shall be applied toward the payment thereof.

44. *Nuisance.*—All work done under any contract must be performed in such a manner as, in the opinion of the commissioners, will not create a nuisance nor be injurious to public health.

45. *Commissioners.*—Wherever the word "commissioners" is used, it is understood to mean the Commissioners of the District of Columbia.



46. *Supplementary service.*—If any contractor for the collection and removal of any class of material described in paragraph 1 of these specifications, fails, upon request by the commissioners, to provide in full the schedule-collection service as required by the contract, the commissioners may, after one week's notice in writing to said contractor, cause to be instituted a supplementary collection service by vehicles employed under their own direction and may charge the cost of such additional service to the said contractor; and the amount of such cost will be deducted from any moneys due or to become due said contractor, and retained by the District, or paid to the person or persons employed by the commissioners to do such work.

47. *Removal of night soil from temporary construction work.*—The contractor for the collection and removal of night soil will be required, and said contractor hereby agrees to collect and to remove within 48 hours after notice to do so, all such night soil as may accumulate in regulation privies established within the District of Columbia by contractors engaged on construction work; and said contractor for the collection and removal of such night soil hereby agrees to charge the person requesting such collection and removal at the rate of not to exceed \$1 per barrel of 48 gallons capacity.

#### HAULING ASHES AND REFUSE FROM BUILDINGS UNDER CONTROL OF THE COMMISSIONERS.

48. *Work to be done.*—The work to be done consists of hauling all ashes and refuse from the following buildings under the control of the commissioners, viz: Public-school buildings, houses of fire-apparatus companies, police stations, District Building, municipal lodging house, police court, Home for ex-Union Soldiers and Sailors, and from any other District institutions or buildings that the commissioners may order, the same to be disposed of as required by regulations of the District of Columbia. Ashes may become the property of the contractor or, at his option, may be deposited on the dumps designated from time to time by the commissioners and in accordance with their direction. Paper and other light refuse must be removed in sacks or bags tightly tied, or otherwise secured, so that none of the contents can escape in loading or in transportation, and such refuse may become the property of the contractor or may, at his option, be delivered to the contractor for the disposal of miscellaneous refuse at the point or points designated by said latter contractor, and approved by the commissioners.

49. *Carts or wagons.*—Bidders for hauling ashes and refuse from buildings under the control of the commissioners must state specifically what facilities they have for doing the work, and all carts or wagons used on the work must have tight bodies and have a capacity of 1 cubic yard or exact multiple thereof. The carts or wagons are to be covered while going to the dump, and no vehicle is to be used unless measured by the sealer of weights and measures of the District, who will mark in a conspicuous place on the body the capacity of each when filled with a "well-rounded-off" load.

50. *Quantity.*—Nothing in this contract shall be so construed as to prevent the District of Columbia from hauling such quantities of such ashes and refuse, or from permitting others to remove so much of the same without cost to the District, as the commissioners may desire. The removal by the contractor of less than a full load will not be permitted. Rubbish and ashes must be hauled separately and must not be mixed.

51. *Payments.*—Payments for hauling ashes and refuse from buildings under the control of the commissioners will be made monthly for all jobs of work which shall have been completed during the previous month, as required by the contract. Bills must be made in triplicate on forms to be furnished by the commissioners and presented monthly, together with the receipts, to the auditor, District of Columbia, District Building.

52. *Receipts.*—The contractor for the hauling of ashes and refuse from buildings under the control of the commissioners will be required to take receipts for all ashes and refuse removed by him.

53. *Time of collection.*—Collections of ashes and refuse from the buildings referred to in paragraph 48 of these specifications must be made within 48 hours after notice from the superintendent of street cleaning, and failure to make such collections will render the contractor liable to the provision of this contract providing for failure and for liquidated damages. (See pars. 37 and 43.)

#### SPECIFICATIONS FOR THE COLLECTION AND DISPOSAL OF NIGHT SOIL.

[Effective July 1, 1913.]

1. *Definition.*—The term "night soil" wherever it occurs in these specifications means the contents of all privies and human fecal matter deposited on streets, avenues, alleys, roads, and open lots.

2. *Hours of collection.*—Night soil must be collected between 7 a. m. and 6 p. m.

3. *Time allowed for collection.*—The time allowed the contractor for any particular collection, after receipt of notice from the superintendent of street cleaning, shall not exceed 48 hours. Not more than 24 hours will be allowed to elapse between the time of collection and disposal or removal from the District of Columbia.

4. *Receptacles and manner of collection.*—Night soil must be removed from the privies and transported to the disposal site by means of some air-tight apparatus, pneumatic or other process, satisfactory to the Commissioners of the District of Columbia, so as to prevent the contents from being agitated or exposed to the open air during the process of such removal or transportation.

Night soil intended for collection will be placed by householders in box privies constructed in accordance with the law. For the details of the construction of such privies, attention of bidders is invited to an act of Congress entitled "Act to regulate in the District of Columbia the disposal of certain refuse and for other purposes," approved January 25, 1898. Attention is also called to certain regulations of the health department in regard to the care and cleaning of privies. The commissioners will endeavor to enforce this act of Congress and the health-department regulations so far as may be practicable, but nothing in this act or in the health-department regulations shall relieve the contractor from making collections of night soil when, in the opinion of the superintendent of street cleaning, such collections are necessary. If, in making the collections for which notice has been given by the superintendent of street cleaning, the contractor discovers any failure on the part of the householder to comply with the requirements of the above-mentioned act of Congress or the health-department regulations, he must immediately notify the superintendent of street cleaning in writing of any such failure.

5. *Obstruction of streets, etc.*—If any street, avenue, alley, or road be obstructed so that vehicles used for the collection of night soil can not pass into, over, or through the same, the contractor must cause it to be removed to collection vehicles on the streets, avenues, alleys, or roads which are not obstructed.

6. *Collection.*—The contractor must see that the collectors employed by him close any gates which they have opened in the process of collection and leave the premises after such collection in as good condition as before the collection was made.

7. *Transportation.*—Arrangements for transportation and the method of disposal must be such that regular daily disposal will not be interrupted by reason of (1) the obstruction of the Potomac River by ice or otherwise; (2) the effect of bad weather on roads; (3) inadequate railway facilities.

8. *Lost articles.*—Articles of special value found in the night soil collected must be kept by the contractor in his office for a period of one year after the finding thereof.

As soon as possible after the finding thereof, the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A report of the finding of any such article shall be forwarded immediately to the superintendent of street cleaning, containing a full description of the article, name of the finder, and such other information as may be of assistance in discovering the owner.

9. *Collection vehicles.*—All collection vehicles used by the contractor must be so constructed as to be loaded and unloaded and to carry their contents without offense to the public. They must be strongly built and marked with the name and address of the contractor and must be kept in good repair, well painted, thoroughly clean, and free from odor at all times. The contractor must present all vehicles used by him for inspection at any time or place which may be designated by the superintendent of street cleaning.

10. *Animals.*—When horses or mules are employed, none but strong, serviceable animals shall be used in connection with any work performed under these specifications, and ill treatment or neglect of same will not be permitted.

11. *Disinfectants.*—The contractor shall keep his plant and equipment thoroughly disinfected. He shall also carry lime or other disinfectants on his collecting vehicles, and each privy, after the contents have been removed, shall be thoroughly disinfected.

A statement of the kinds of disinfectants to be used and the method of applying the same must be submitted to the superintendent of street cleaning for his approval previous to July 1, 1913.

12. *Notice of collection.*—The notification to collect, issued by the superintendent of street cleaning, will be based largely on requests from householders for collection. The commissioners will, however, assume no responsibility for the correctness of such notification by the superintendent of street cleaning, and the contractor shall not charge nor can he collect from the District of Columbia any loss or losses incurred in responding to said notification where the address given is incorrect or it is found that there is no night soil at such locality to be removed.

13. *Nuisance.*—All work done under this contract must be performed in such a manner as in the opinion of the commissioners will not create a nuisance nor be injurious to public health.

14. *Reports by contractor.*—The contractor shall make daily reports to the superintendent of street cleaning on blank forms approved by him, which reports shall show the kind and number of collection vehicles, the number of men, the number of horses, the number and location of sites used for disposal purposes, the number and location of transfer points, the number of other vehicles or boats used in transportation in addition to those used in the collection service, the number of air-tight receptacles of night soil collected and the capacity of each receptacle. The contractor shall also furnish, in writing, such information in regard to the conduct of the work under his contract as may be required from time to time by the said superintendent or by the commissioners. If such information is not received within two weeks from the date of request for the same, the commissioners may in their discretion retain such money or moneys as may be due said contractor until he has supplied the information requested.

15. *Telephone and visits.*—The contractor shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense and shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent, every day except Sundays and legal holidays. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by the contractor under these specifications.

16. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

#### HAULING ASHES AND REFUSE FROM BUILDINGS UNDER CONTROL OF THE COMMISSIONERS.

[Effective July 1, 1913.]

1. *Work to be done.*—The work to be done consists of the collection and disposal of all ashes and refuse from the following buildings under the control of the commissioners, viz: Public-school buildings, houses of fire-apparatus companies, police stations, District Building, municipal lodging house, police court, public library and branches, Home for ex-Union Soldiers and Sailors, and from any other District institutions or buildings that the commissioners may order, the same to be disposed of as required by regulations of the District of Columbia. Ashes may become the property of the contractor or, at his option, may be deposited on the dumps designated from time to time by the commissioners and in accordance with their direction. Paper and other light refuse must be removed in sacks or bags tightly tied, or otherwise secured, so that none of the contents can escape in loading or in transportation, and such refuse may become the property of the contractor or may, at his option, be delivered to the contractor for the disposal of miscellaneous refuse at the point or points designated by said latter contractor and approved by the commissioners.

2. *Quantity.*—Nothing in this contract shall be so construed as to prevent the District of Columbia from hauling such quantities of such ashes and refuse or from permitting others to remove so much of the same without cost to the District as the commissioners may desire. The removal by the contractor of less than a full load will not be permitted. Refuse and ashes must be hauled separately and must not be mixed.

It is estimated that approximately 10,000 cubic yards of ashes and refuse will be offered to the contractor each year for collection and disposal, and this amount will be used in arriving at the amount of bond, but the commissioners will assume no responsibility as to the correctness of this estimate.

3. *Hours for collection.*—Collections must be made between 7 a. m. and 6 p. m.

4. *Time allowed for collection.*—Collections must be made within 48 hours after notice from the superintendent of street cleaning, and failure to make such collections will render the contractor liable to the provision of this contract providing for failure and for liquidated damages.

5. *Dumps for ashes.*—If the commissioners authorize the disposal of ashes on such public dumps as may be controlled by them from time to time the contractor shall provide his own safeguards at such dumping places and shall take such precautions as may be necessary to prevent accident. The commissioners will assume no liability for accidents resulting through the contractor's use of said dumping places. The superintendent of street cleaning shall station at such places a representative who shall have general supervision and control over the points at which dumping must be done, the time of opening and closing said dump, the prevention of all fires on the dump, the trimming and handling of all material, the persons permitted on the dump, and

shall determine the character of such material as is presented for disposal. Only clean ashes will be accepted at such dumps, and the representative of the superintendent of street cleaning shall be empowered to refuse all ashes mixed with other materials brought to the dump and to require such mixed material to be separated or to order it removed forthwith. The contractor shall be bound to conduct the dumping in accordance with the directions of the superintendent of street cleaning, and the contractor must comply with such directions.

6. *Collection vehicles.*—Collection vehicles must have tight bodies and capacities of 1 cubic yard or exact multiple thereof, must be strongly built, well painted, in good repair, and plainly numbered on both sides, and marked with the name and address of the collection contractor. No vehicle is to be used unless measured by the sealer of weights and measures of the District, who will mark in a conspicuous place on the body the capacity of each when filled with a "well-rounded off" load. Ashes must be transported within the District of Columbia in covered vehicles satisfactory to the commissioners.

7. *Animals.*—When horses or mules are employed, none but strong serviceable animals shall be used in connection with any work performed under these specifications, and ill-treatment or neglect of same will not be permitted.

8. *Notice of collection.*—The notification to collect, issued by the superintendent of street cleaning, will be based largely on requests from buildings for collection. The commissioners will, however, assume no responsibility for the correctness of such notification by the superintendent of street cleaning, and the contractor shall not charge nor can he collect from the District of Columbia any loss or losses incurred in responding to said notification where the address given is incorrect or it is found that there are no ashes or refuse at such locality to be removed.

9. *Telephone and visits.*—The contractor shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense, and shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent, every day except Sundays and legal holidays. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by the contractor under these specifications.

10. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

11. *Lost articles.*—Articles of special value found in the ashes or refuse collected must be kept by the contractor in his office for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A report of the finding of any such article shall be forwarded immediately to the superintendent of street cleaning containing a full description of the article, name of the finder, and such other information as may be of assistance in discovering the owner.

## REPORT OF THE INSPECTOR OF ASPHALTS AND CEMENTS.

WASHINGTON, October 4, 1913.

SIR: I have the honor to submit the following report of the operations of the office of the inspector of asphalts and cements during the fiscal year ending June 30, 1913, summarized in the tables made a part hereof.

The samples referred to therein as having been taken from the municipal asphalt plant were those gathered by this office from the plant located at Second and Florida Avenue NE., and operated under the supervision of the engineer of highways.

Directions as to the formulas used in the preparation of the materials were given by this office and tests made of the materials entering into and produced therefrom.

Two classes of asphalt concrete were produced; one consisting of asphalt cement, trap-rock screenings, sand, and limestone dust; the other consisting of old asphalt surface mixture (topping and binder) asphalt cement, sand, trap-rock screenings, and limestone dust. The percentage of the materials entering into each are given herein.

These materials were used in the repair of cuts and patch work in asphalt pavements. Satisfactory results were obtained from both classes. The use of the old asphalt surface material if properly manipulated at the plant will, I believe, prove economical and entirely satisfactory in this class of work.

All resurfacing and new pavements laid were as formerly—by contract.

*Total number of samples tested.*

Asphalts:	
Bermudez.....	4
California.....	1
Mexican.....	6
Sun Co. (cement).....	9
Texaco.....	4
Trinidad, Lake, crude.....	3
Asphalt mixtures:	
Binder.....	14
Block.....	44
Block mixture.....	41
Cement (binder).....	141
Cement (block).....	44
Cement (topping).....	277
Cement (concrete).....	9
Concrete mixture.....	9
Topping mixture.....	301
Cement, Portland.....	9,240
Pipe, lead.....	4
Oils:	
Dustoline.....	1
Flux.....	1
Fuel.....	5
Residuum.....	27
Road.....	38
Sands.....	210
Stone:	
Binder.....	92
Crushed.....	15
Limestone dust.....	23
Trap-rock screenings.....	9
Tar.....	4
Water, Potomac.....	146
Miscellaneous.....	55
Total.....	10,777

## ASPHALTS.

Test of samples of asphalt used in the laying and repairing of pavements for the District of Columbia showed the following percentage of bitumen soluble in carbon bisulphide.

From Cranford Paving Co.:	Per cent.
4 samples Bermudez, refined, representing 1,770 tons.....	93.31
1 sample Mexican Aztec, refined, representing 57 tons.....	99.37
From municipal asphalt plant:	
1 sample Bermudez cement, representing 32 tons.....	94.19
1 sample Mexican Aztec cement, representing 20 tons.....	99.81
9 samples Sun Co. cement, representing 304 tons.....	99.25
4 samples Texaco cement, representing 30 tons.....	99.26
From Washington Asphalt Block & Tile Co.:	
3 samples Trinidad Lake, crude, representing 4,200 tons.....	<sup>1</sup> 52.70

<sup>1</sup> After refining.

## ASPHALT CEMENTS.

*Penetration results of asphalt binder, concrete, and topping used by the District and paving companies.*

[Penetrations at 77° F.]

	Cranford Paving Co.—Bermudez.		Municipal asphalt plant.				Asphalt Block & Tile Co.—Lake Trinidad block.
	Binder.	Topping.	Bermudez.	Mexican Aztec.	Sun Co.	Texaco.	
Number of samples.....	296	290	21	6	97	12	41
Highest test—							
Office.....	68	65	79	70	81	63	23
Yard.....	70	60					25
Lowest test—							
Office.....	53	51	57	63	51	55	15
Yard.....	57	52					18
Average of all samples tested:							
Office.....	60	54	66	66	68	61	20
Yard.....	60	55					22

## BINDER STONE.

During the year there were examined 92 samples of binder stone used in the laying and repairs of asphalt pavements, with no rejections.

	Number of samples.	Number of cubic yards.
Cranford Paving Co.....	82	3,200
Municipal asphalt plant.....	10	362

## ASPHALT BINDER MIXTURE.

Analysis of 24 samples taken from the Cranford Paving Co. and Municipal asphalt plant showed an average of bitumen soluble in carbon bisulphide as follows:

	Number of samples.	Bitumen soluble in carbon bisulphide.
Cranford Paving Co.....	20	<i>Per cent.</i> 3.4
Municipal asphalt plant.....	4	4.4

## ASPHALT SURFACE MIXTURE.

During the year 587 samples were submitted for examination and analysis. The following tables show the maximum, minimum, and average per cent bitumen contained and the average mesh composition of mineral aggregate used:

	Number of samples.	Highest.	Lowest.	Average
		<i>Per cent bitumen.</i>	<i>Per cent bitumen.</i>	<i>Per cent bitumen.</i>
Cranford Paving Co., asphalt, Bermudez.....	542	11.8	9.5	10.3
Municipal asphalt plant, asphalt, Bermudez.....	11	9.6	7.1	9.0
Asphalt, Sun Co.....	34	14.9	8.0	10.4

*Mesh composition of aggregate used in mixture.*

	Cranford Paving Co.	Municipal asphalt plant.
	<i>Per cent.</i>	<i>Per cent.</i>
Retained on sieve having—		
20 mesh per linear inch.....	4.4	7.5
40 mesh per linear inch.....	20.8	29.2
60 mesh per linear inch.....	28.2	32.1
80 mesh per linear inch.....	16.5	14.3
100 mesh per linear inch.....	8.6	6.1
Passing 100 mesh per linear inch.....	21.4	10.8

## LIMESTONE DUST USED IN SURFACE MIXTURE.

This material is used as a filler to reduce the void in the sand used in asphalt surface mixtures. During the year there were examined 23 samples, all of which passed the required degree of fineness; i. e., all to pass a 30 and not less than 85 per cent to pass 100 mesh sieve.

	Samples.	Tons.
Cranford Paving Co.....	20	500
Municipal asphalt plant.....	3	240

## SAND USED IN SURFACE MIXTURE.

Of this material 210 samples representing 27,211 cubic yards were inspected, of which 18,360 cubic yards were rejected on account of coarseness and excessive percentage of mud.

	Number of samples.	Accepted.	Rejected.
		<i>Cu. yds.</i>	<i>Cu. yds.</i>
Cranford Paving Co.....	200	7,640	18,360
Municipal asphalt plant.....	10	1,211	None.

## PETROLEUM RESIDUUM.

All residuum used during the year by the contractors in the preparation of asphalt cement was the product of the Standard Oil Co. A total of 24 samples were submitted by the contractors for tests and examination, which showed the following:

	Samples.	Pounds.
Cranford Paving Co.....	10	500,000
Washington Asphalt Block & Tile Co.....	14	858,546

	Cranford Paving Co.	Washington Asphalt Block & Tile Co.
Specific gravity:		
Highest.....	0.9390	0.9453
Lowest.....	.9642	.9611
Average.....	.9463	.9588
Gravity Baumé:		
Highest.....	19.1	18.1
Lowest.....	15.2	15.1
Average.....	17.95	16.07
Flash:		
Highest.....°F..	390	450
Lowest.....do..	305	295
Average.....do..	354	361
Burns:		
Highest.....°F..	505	560
Lowest.....do..	465	490
Average.....do..	484	525
Loss at 400° F., for 30 hours:		
Highest.....per cent..	6.40	9.38
Lowest.....do..	3.50	1.30
Average.....do..	4.40	3.76

## ASPHALT BLOCK.

About 800,000 paving blocks manufactured by the Washington Asphalt Block & Tile Co., were used in the paving of avenues, streets, and alleys of this city during the year, in the manufacture of which was used Trinidad Lake asphalt, fluxed with petroleum residuum, and a mineral aggregate composed of Potomac granite, trap rock, and limestone.

*Average results of tests of the asphalt cement and mineral aggregate used in their manufacture.*

	As originally used in mixture.	Reduced to 50 per cent purity by addition of limestone dust for laboratory test.
Bitumen soluble in carbon bisulphide.....per cent..	62.0	50.67
Penetration at 77° F., 100 grams, 5 seconds.....	22.0	16.0
Penetration at 115° F., 50 grams, 5 seconds.....	95.3	71.1
Per cent of hardening after heating 300° F. for 18 hours.....per cent..	11.0	1.50
Per cent of loss after heating 300° F. for 18 hours.....do....	.54	.32
Brittleness in centimeters, drop of 25-gram weight at 32° F.....	12.4	13.30

*Asphalt block mixture.*

Specific gravity.....	2.4000
Bitumen soluble in carbon bisulphide.....per cent..	7.81
Mesh composition of mineral aggregate:	
Retained on one-fourth-inch-mesh sieve.....do....	1.30
Retained on 20-mesh per linear inch.....do....	55.20
Retained on 100-mesh per linear inch.....do....	18.55
Passing 100-mesh per linear inch.....do....	24.95
	100.00

## ASPHALT CONCRETE.

During the year there were laid by the Cranford Paving Co. under contract about 22,521 square yards of asphalt concrete, laid on 6-inch concrete base. The asphalt concrete mixture consisted of two parts trap rock crushed to a size from three-fourths inch to dust, and one part of concrete sand, to which was added 5 per cent limestone dust.



The stone and sand were heated to a temperature of about 300° F., the limestone being added in the cool state to the hot mixture and thoroughly mixed in an asphalt mixer. Hot asphalt cement (Bermudez) was then added and the whole thoroughly mixed for about five minutes; it was then hauled from the paving plant to the site of the work and spread over the roadbed to a thickness of 3 inches, then rolled with 5 and 10 ton steam rollers until thoroughly compact. Over this surface was then spread a thin coating of asphalt cement for the purpose of filling voids. A light coating of trap-rock screenings three-eighths to one-eight inch was then spread on the surface as a top coating and rolled with a 10-ton steam roller.

Following is a table showing average of laboratory tests of asphalt cement and mineral aggregate used in the preparation of the asphalt concrete.

## ASPHALT CEMENT.

Bitumen soluble in carbon bisulphide.....	per cent..	98.2
Penetration at 77° F., 5 seconds, 100 grams.....		60

## CONCRETE MIXTURE.

Bitumen soluble in carbon bisulphide (not including flush coat).....	per cent..	7.35
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## MINERAL AGGREGATE MESH COMPOSITION.

Retained on—	Per cent.
1-inch mesh screen.....	0.0
2-inch mesh screen.....	5.0
3-inch mesh screen.....	13.7
4-inch mesh screen.....	19.2
8 mesh per linear inch.....	17.0
10 mesh per linear inch.....	3.8
20 mesh per linear inch.....	10.2
40 mesh per linear inch.....	13.0
60 mesh per linear inch.....	6.1
80 mesh per linear inch.....	3.2
100 mesh per linear inch.....	1.0
Passing 100 mesh per linear inch.....	8.0
Specific gravity of stone.....	2.976
Specific gravity of sand.....	2.705
Voids in aggregate.....	per cent.. 20.76

## ASPHALT SURFACE MIXTURE (ASPHALT CONCRETE).

During the year there were examined 43 samples of asphalt concrete, representing about 885 cubic yards. This material was a mixture composed of trap-rock screenings 74 per cent, fine sand 15 per cent, limestone dust 4 per cent, and asphalt cement 7 per cent (penetration at 77° F., 5 seconds, 100 grams, 65). The average mesh composition of this mineral aggregate is shown in the table below. The stone, sand, and limestone dust were heated to a temperature of about 350° F., in the heating drum of a Warren portable asphalt mixer. The hot asphalt cement was then added and the whole thoroughly mixed for about five minutes; it was then discharged into carts and hauled to the site of work, which consisted principally of repairs to asphalt pavements. Examination of the material produced showed an average of bitumen soluble in carbon bisulphide 6.6 per cent.

## MINERAL AGGREGATE MESH COMPOSITION.

Retained on sieves having—	Per cent.
1-inch mesh.....	0.75
2-inch mesh.....	15.90
8 mesh per linear inch.....	27.30
10 mesh per linear inch.....	5.25
20 mesh per linear inch.....	11.90
40 mesh per linear inch.....	12.70
60 mesh per linear inch.....	7.60
80 mesh per linear inch.....	4.40
100 mesh per linear inch.....	1.30
Passing 100 mesh per linear inch.....	12.70

There were examined 60 samples of asphalt concrete mixture, representing about 2,102 cubic yards.

This material was a mixture composed of old asphalt surface mixture (topping and binder) which after being removed from the street was hauled to the municipal asphalt plant and crushed in a Noyes rotary crusher to a fineness ranging from 1 inch to dust; to this material was then added trap-rock screenings, fine sand, limestone dust, and asphalt cement in the following proportions: Old asphalt surface material 73 per cent, fine sand 16.3 per cent, trap-rock screenings 5.7 per cent, limestone dust 2 per cent, and asphalt cement 3 per cent (penetration at 77° F., 5 seconds, 100 grams, 68), the whole being mixed as above described, under asphalt concrete and used for the same purpose.

Following are average results of tests showing percentage of asphalt and mesh composition of mineral aggregate of the old asphalt surface material:

#### OLD ASPHALT SURFACE MIXTURE (AFTER CRUSHING).

Bitumen soluble in carbon bisulphide.....per cent.. 8.0

#### MINERAL AGGREGATE MESH COMPOSITION.

Retained on sieves having—	Per cent.
½-inch mesh.....	5.4
¾-inch mesh.....	5.6
8 mesh per linear inch.....	4.5
10 mesh per linear inch.....	0.9
20 mesh per linear inch.....	4.0
40 mesh per linear inch.....	24.2
60 mesh per linear inch.....	25.1
80 mesh per linear inch.....	10.0
100 mesh per linear inch.....	4.0
Passing 100 mesh per linear inch.....	16.0

#### ASPHALT CONCRETE MIXTURE (AFTER PRODUCTION AVERAGE).

Bitumen soluble in carbon bisulphide.....per cent.. 7.9

#### MESH COMPOSITION MINERAL AGGREGATE.

Retained on sieves having—	Per cent.
½-inch mesh.....	3.5
¾-inch mesh.....	10.0
8 mesh per linear inch.....	8.0
10 mesh per linear inch.....	1.3
20 mesh per linear inch.....	5.1
40 mesh per linear inch.....	23.3
60 mesh per linear inch.....	20.8
80 mesh per linear inch.....	9.0
100 mesh per linear inch.....	2.4
Passing 100 mesh per linear inch.....	14.5

#### TRAP-ROCK SCREENINGS.

During the year there were examined 9 samples of trap-rock screenings used in the laying of asphalt concrete pavements, with no rejections.

	Number of samples.	Number of cubic yards.
Cranford Paving Co.....	5	2,066
Municipal asphalt plant.....	4	1,073

## HYDRAULIC CEMENTS.

*Barrels inspected and the average results of tests on same—Portland cement.*

	Atlas.	Dragon.	Nazareth.	Old Dominion.
Number of barrels.....	3,396	14,700	6,840	3,200
Number of samples.....	339	1,470	684	320
Fineness passing 100-mesh sieve..... per cent.	93.9	84.5	97.0	95.0
Fineness passing 200-mesh sieve..... do.	76.2	78.8	85.1	78.1
Initial set.....	2hr 38m	2hr 38m	2hr 58m	2hr 16m
Per cent water used:				
Neat cement.....	22.0	24.0	23.0	23.0
3 parts Ottawa sand.....	10.1	10.5	10.0	10.3
Temperature of air and water.....	77	78	83	79
Tensile strength in pounds, per square inch:				
Neat, 7 days.....	694	705	820	723
Neat, 28 days.....	743	716	824	752
Sand (1.3), 7 days.....	321	343	397	343
Sand (1.3), 28 days.....	425	414	471	393
Specific gravity.....	3.140	3.146	3.141	3.120

	Saylors.	Security.	Tidewater.	Vulcanite.
Number of barrels.....	5	8,550	54,135	9,170
Number of samples.....	5	855	5,413	917
Fineness passing 100-mesh sieve..... per cent.	96.2	95.5	92.5	94.5
Fineness passing 200-mesh sieve..... do.	78.2	79.8	76.9	79.1
Initial set.....	3hr	3hr 8m	1hr 35m	3hr 24m
Per cent water used:				
Neat cement.....	22.5	21.5	22.0	22.0
3 parts Ottawa sand.....	10.2	9.9	10.2	10.2
Temperature of air and water.....	81	75	73	74
Tensile strength in pounds, per square inch:				
Neat, 7 days.....	735	748	642	773
Neat, 28 days.....	735	835	749	803
Sand (1.3), 7 days.....	335	310	254	346
Sand (1.3), 28 days.....	335	418	350	440
Specific gravity.....	3.176	3.152	3.144	3.164

In the testing of cement, samples are taken from 10 barrels of each 100-barrel lot and tested individually. The 10,003 samples tested represent 99,996 barrels, of which 2,100 were rejected.

*Barrels of cement tested and by whom submitted.*

	Barrels.
Brenizer, W. F. (Dragon).....	14,700
Cranford Paving Co.:	
Atlas.....	3,396
Old Dominion.....	2,400
Security.....	6,900
Tidewater.....	1,500
Vulcanite.....	9,170
	23,366
District of Columbia:	
Nazareth.....	6,840
Security.....	1,650
Tidewater.....	51,665
	60,155
Harper & Voigt (Tidewater).....	960
Municipal architect (Saylors cement).....	5
Superintendent of water department (Tidewater).....	10
Washington Asphalt Block & Tile Co. (Old Dominion).....	800
Total.....	99,996

The materials enumerated in the first table show the total number of samples tested or analyzed during the year.

Many of these were submitted by the immediate heads of District departments; reports showing results of tests were forwarded thereto. Others were gathered by this

office from the municipal asphalt plant and the plant and warehouses of the contractors, reports showing results of tests being made a record of this office. The samples gathered were collected during my daily rounds of inspection.

While the work of the laboratories during the past year has been heavy, it has not at any time been in arrears.

Very respectfully,

J. O. HARGROVE,

*Inspector of asphalts and cements.*

Capt. MARK BROOKE,

*Corps of Engineers, United States Army,*

*Assistant to Engineer Commissioner, District of Columbia.*

## REPORT OF THE SURVEYOR.

WASHINGTON, D. C., *September 29, 1913.*

SIR: I have the honor to transmit herewith the following report of the operations of this office, including the street extension division, for the year ended June 30, 1913.

The total amount of fees received from private parties for work done by this office was \$16,608.32. The receipts for the past year have been somewhat less than for the previous year, the work of the office, however, being heavier owing to large surveys for the District of Columbia and the United States. This falling off in receipts is, no doubt, due to the general business depression during the past year; building operations have not been nearly so extensive as in former years. This shrinkage in building affects the receipts of this office.

Judging from surveys and subdivisions for the past year the suburban development of the District has not been as great as for the year preceding it. The total number of new blocks created by reason of new subdivisions in the agricultural part of the District was 34. The number of orders received for work for private parties was 3,874; in addition to these, surveys for the various departments of the District of Columbia amounted to 104. The office, in addition to this work, has completed a survey of about 1,500 acres of land for the proposed reformatory in Fairfax County, Va., adjacent to the Occoquan workhouse. This work took part of the force from the office for about three months, but has now been completed, and report with map showing complete survey has been forwarded to the commissioners.

The survey for the United States of the property proposed to be taken for the park connection along Rock Creek between the Zoological Park and Potomac River is completed, and will be forwarded with a report to the commissioners within a few days. This is one of the largest and most difficult surveys undertaken by this office for years, and has required the use of one field party practically the entire summer.

A survey of Florida Avenue from Rock Creek on the west to Fifteenth Street east was made for the Coast and Geodetic Survey. Monuments were planted at street intersections and referenced to block corners.

The following table is submitted as a matter of comparison and convenience. It will show the relation of the work for the past year with that of the previous year.

	Fiscal year.	
	1911-12	1912-13
FOR PRIVATE PARTIES.		
Individual lots or parts of lots surveyed in city and county.....	2,852	2,254
Certificates of survey issued covering one or more lots.....	1,178	1,146
Duplicates of above recorded in survey certificate books.....	1,178	1,146
Separate surveys made to verify walls.....	1,011	932
Individual buildings inspected as to location of new walls.....	2,502	2,302
Walls moved before final certification.....	1,007	948
Large tracts in county surveyed, subdivided, and recorded.....	16	22
Outline surveys in county of unsubdivided tracts.....	68	55
Subdivision blanks prepared.....	517	396
Duplicate subdivision blanks prepared for assessor.....	517	396
Subdivisions recorded.....	507	333
Total of individual new lots in subdivisions.....	5,849	2,385
Plats of one or more recorded lots to accompany applications for building permits (commonly called building plats).....	1,375	1,290
Plats made under regulations for theaters, stables, motors, etc.....	83	111
Indorsements on survey plats.....	1,178	1,146
Indorsements on wall survey plats.....	1,011	932
Estimates of cost issued in triplicate.....	4,224	3,874
Plats made up on order of private parties.....	3,754	2,947
Total of fees paid to collector of taxes by private parties.....	\$19,504.55	\$16,608.32

	Fiscal year.	
	1911-12	1912-13
<b>FOR THE DISTRICT OF COLUMBIA.</b>		
Surveys for the District of Columbia.....	99	104
Plats recorded (condemnations, dedications, etc.).....	66	63
Postal card reports concerning walls to owners.....	1,011	932
Reports concerning walls to building inspector.....	1,034	971
Assessment and taxation plats recorded.....	276	252
<b>MISCELLANEOUS.</b>		
Total of surveys for the District of Columbia and private parties.....	2,372	2,259
Total of plats, public and private, including plats drawn in books.....	5,688	5,315

**PARKS.**

In this connection there was an appropriation of \$25,000 in the last District appropriation act for the acquisition by condemnation of small parks at the intersection of streets outside of the limits of the original city of Washington. Eight triangles have been selected and plats forwarded to the commissioners recommending their acquisition. It is believed that the triangles selected will come within the \$25,000 appropriated.

It is earnestly recommended that this appropriation be continued, as that part of the District beyond Florida Avenue has very much less park space caused by street intersections than the old city. This appropriation should be continued or even increased, so that these very desirable triangles can be secured before improvements are made rendering their acquisition practically prohibitory.

It is believed that the previous recommendation for the acquisition of Piney Branch Parkway should be included in this year's estimates. This land is increasing rapidly in value, and much of the natural beauty of this park is being destroyed by the encroachment of improvements, destruction of the timber, and the land becoming a public dump. This park is recommended by the park commission in their report of 1902. The destruction of this land for use as a park would be a loss to the District, and should not be permitted. It would connect the Zoological Park and Rock Creek Park with the Soldiers' Home and the Anacostia River improvements.

**SURVEYS OF OLD SUBDIVISIONS.**

The last District appropriation act provided for an appropriation of \$2,500 for surveys of old subdivisions. In connection with this work monuments have been planted marking the block corners in Wesley Heights, Harlem, Lovers Lane, and Garfield. Many of the old property lines have been surveyed and marked by substantial monuments along Alabama Avenue, and Anacostia River between Twining City and Anacostia. A number of these old subdivisions were made many years ago, and the office is without any survey data. Sometimes an order for the survey of one lot for a fee of \$8 will involve several days of field work before an intelligent survey of an individual lot can be made. This comprehensive survey of these various subdivisions will render easy the survey of an individual lot. I have asked that this appropriation be continued another year.

**STREET EXTENSION.**

Transmitted herewith is a report of the assistant surveyor on all matters relative to bills to Congress and condemnation cases for streets and alleys.

As stated by the assistant surveyor few alley condemnation cases were recommended this year on account of a decision of the court in which it was held that the method of advertising heretofore followed did not comply with the law, and required continuous publication for 20 days in three daily papers. This method makes the proceedings very expensive, and in case of small alleys makes the assessment against the property benefited so heavy that it is believed that the property could not stand the assessment. It is believed that this will be corrected in the urgent deficiency bill now before Congress. As soon as this amendment becomes a law, there are many alley condemnation cases that should be taken up at once.

It is recommended that the commissioners take some action providing for the widening of Wisconsin Avenue from its intersection with Thirty-seventh Street to the District Line; for the widening of Georgia Avenue from Florida Avenue to the District

Line, and for the widening of Benning's Road from Fifteenth Street to the Anacostia Road. These three highways are the principal suburban thoroughfares in the three sections of the District, namely, the northwest, the north, and the northeast, respectively, each being the leading thoroughfare into Maryland through its particular section. There are no other streets or avenues leading from Washington into Maryland over which there is as heavy travel as over these avenues. They are each occupied by car lines, making the roadway entirely too narrow for the heavily loaded farmers' teams coming into the city from Maryland. The highway plan provides for the widening of these highways, and the commissioners have authority under existing law to condemn in accordance with this plan, but in these instances it is extremely doubtful whether a jury could find benefits equal to damages, as required by law, for the reason that many improvements would be taken. It is believed that consideration should be given to the question of assessing benefits against the railroad companies, and if this could not be done under existing law, new legislation would be necessary.

This office, under date of September 10, 1912, recommended that a minor street be extended from Georgia Avenue to Ninth Street, north of Florida Avenue, through squares 2875 and 2877, and that recommendation is now renewed. It was pointed out at that time that this was a most urgent public necessity, relieving as it would the terribly congested conditions at Seventh Street and Florida Avenue. This congestion is especially manifested when the baseball crowds are leaving the ball park, rendering conditions in that locality extremely dangerous. Serious accidents have occurred, and no doubt will continue to occur if some remedy is not provided. I know of no place in the District where conditions are as congested and dangerous as at this point. This bill provides also for changing the Georgia Avenue car tracks, removing them entirely, south of the proposed street, along Georgia Avenue and Florida Avenue, to Ninth Street, and bringing them through on the proposed street, through the above-mentioned squares, direct to Ninth Street. This would relieve the double occupation by car lines on Florida Avenue, between Seventh and Ninth Streets, and leave Georgia Avenue from the proposed street to Florida Avenue free of cars, which would be a great benefit in the way of safety and convenience to the thousands of patrons going to and from the ball park. It is not believed that this desirable improvement could be accomplished under the present minor street law, because of the contemplated change in the car tracks, and the property benefited could not possibly stand the whole cost.

Thirteenth Street should be condemned from Spring Road to Colorado Avenue. A large part of this street has been acquired by dedication between the points mentioned, but other parts of it will probably never be acquired in this manner on account of the serious way in which it intersects some of the small properties. It is believed that this extension can only be acquired by condemnation within any reasonable time. If this extension were made it would open up and connect a number of active subdivisions in this part of the District, giving them an outlet into the city over a street not occupied by car lines. This section is improving rapidly, and there is grave danger of improvements being built within the line of the proposed street, as has been done in other instances in this locality, rendering the extension very expensive if delayed.

#### BILLS BEFORE CONGRESS.

Bills before Congress, and the ones which seem to me to be the most important at this time, and the ones that the commissioners should make especial effort to have enacted into law, are Senate bill No. 13, providing for the widening of Rhode Island Avenue between Fourth Street and the District Line, northeast; Senate bill No. 19, for the widening and extension of Spring Road between New Hampshire Avenue and Twentieth Street; Senate bill No. 22, for the condemnation of all streets in Barry farm.

I wish to urge my previous recommendation in regard to the condition of the records of this office. The assessor's office, in accordance with an act of Congress, was authorized to designate all old blocks in subdivisions with new block numbers, so that there would be no duplication of lots or blocks; for example, Columbia Heights, block 22, was designated as square 2347 for assessment and taxation purposes, and so on through the entire District. This new designation is used by the title companies, and is becoming more in use by the public each year, but the records of this office are carried in accordance with the old designations, there being no authority for any change, the law providing that the new designations should be used for assessment and taxation only. This double designation causes no end of confusion and mistakes, the old method this office is obliged to use becoming more obsolete each year. There is certainly no legislation more important for the convenience of the public or this office, and I earnestly recommend that a law be passed correcting this situation, and a small appropriation of \$4,000 for the execution of the same be provided.

## INTERIOR PARKS AND MINOR STREETS.

There is a fund of \$100,872 available for the condemnation of alleys and minor streets. This is the result of an appropriation made in 1893, followed by subsequent appropriations in 1904, 1907, and 1908. This appropriation was made largely with a view of converting inhabited alleys into minor streets. Several efforts have been made to convert alleys into minor streets, but it has been found impracticable to do this under the existing law. The Supreme Court of the United States in the *Brandenberg* case held that the total cost of the condemnation need not be assessed as benefits if the jury was of the opinion that the benefits did not exist; but the auditor, I believe, holds that the award could not be paid, on the ground that the appropriation must be reimbursed to the full amount of damages assessed against it. In many cases a condemnation requiring the whole cost to be assessed as benefits would be confiscation, and it is believed that some remedial legislation should be had, so that this appropriation would be available for the purpose of converting inhabited alleys of the city into minor streets.

In the matter of eliminating interior alleys, opinions differ as to the method, there being two sides, one in favor of the interior park and the other in favor of the minor street. This question has been much discussed recently, and has been prominently brought before the public through the public press. If the interior-park scheme were extended throughout the city with a view of eliminating the objectionable features caused by inhabited alleys, it would involve the expenditure of a very large amount of money, and at the same time making no provision for caring for the inhabitants of these alleys. There is no doubt of the urgent necessity for wiping out these localities of vice and insanitary conditions, but the conversion of them into parks, it is not believed, is the most desirable, for the idea and whole object of a park is that it shall be for the benefit of the greatest number of people, affording a place of recreation and pleasure, at the same time serving a great purpose of beautifying and making more attractive the city. These interior parks would be surrounded, more or less, by insanitary back yards, from which there would be disagreeable odors, and the backs of houses, with all their objectionable features exposed to the park. In many cases these houses would be inhabited by undesirable tenants, whose mode of living and influence upon the park would certainly be a serious objection. I believe, in some cases, two minor streets might be run through the square from street to street, providing for two fronts for the remaining lots, with a parkway between the minor streets, opening up on the main thoroughfares of the city. This would certainly be a far more preferable treatment than the interior park. In this manner the park would be accessible from two streets, making a place of recreation and adding beauty to the city. Where the square would not permit a treatment of this kind, a minor street would accomplish a much needed reform. This could be well policed and cleaned, and would provide a plan for subdividing the square profitably. This plan could be extended throughout the city, cleaning up more objectionable localities than would be possible under the interior-park scheme and without such a great expenditure of money. The minor-street plan would add a revenue from taxes by reason of this treatment, where a burden would be imposed by the other.

The work of this office requires prompt and efficient service, it being a class of work upon which improvements depend and transfers are made, and any delay in its execution would be a serious loss to the public, and I take this occasion to express my appreciation for the efficient service rendered by the employees of this office during the past year.

Very respectfully,

MELVIN C. HAZEN,  
*Surveyor District of Columbia.*

Capt. MARK BROOKE,  
*Corps of Engineers, United States Army,*  
*Assistant Engineer Commissioner, District of Columbia.*

## STREET-EXTENSION DIVISION.

WASHINGTON, September 19, 1913.

SIR: I have the honor to submit herewith report of the operation of the street-extension division for the fiscal year ended June 30, 1913:

Reports, maps, and bills to be sent to Congress were prepared on the following projects:

Widening of Naylor Road.

Park at Twenty-sixth, Twenty-seventh, and Q Streets, and road along Oak Hill Cemetery.

Parks and reservations—small. Plan to extend system over entire District of Columbia.

Widening and extension of Rhode Island Avenue from Fourth Street east to the District line.

Minor street, squares 2875 and 2877.

Extension of Twenty-fifth Street SE. and White Place.

Widening Wisconsin Avenue, square 1299, to Newark Street.

Very few alley condemnation cases have been filed in court during the year. A court decision that the method of advertising heretofore followed does not comply with the law, and requiring continuous publication in both alley and street condemnations under the code, a method so expensive as to make the cost of small alley cases almost prohibitive, has made it advisable to hold up many alley condemnations until remedial legislation could be enacted.

A number of small park condemnation cases, as provided for in District of Columbia appropriation act, 1914, have been prepared, but are withheld for the same reason.

A large amount of drafting and survey work has been done during the year on two United States condemnation cases, the extension of the Capitol Grounds and the acquisition of Rock Creek Valley from the Zoo Park to the Potomac River.

Submitted herewith is a table showing action taken on all condemnation cases filed during the year, and action on cases previously filed where such cases were not finally disposed of prior to July 1, 1912.

Very respectfully,

J. B. SHINN,

*Assistant Surveyor District of Columbia.*

The SURVEYOR.



*Condemnation cases.*  
STREET EXTENSIONS AND PARKS.

Location.	Court docket No.	Act No.	Act approved.	Case filed.	Verdict filed.	Verdict.		Action on verdict.
						Damages.	Benefits.	
Minnesota Avenue, Pennsylvania Avenue to Sheriff Road.	823	267	Feb. 25, 1909	May 22, 1909	.....	.....	.....	Postponed indefinitely subject to notice Oct. 18, 1912.
Widening of First Street NE.	922	207	June 11, 1910	Nov. 17, 1910	July 17, 1911	.....	.....	Jury reported inability to find benefits equal to damages.
Road along Anacostia River.	926	170	May 10, 1910	Dec. 9, 1910	June 19, 1912	\$51,367.19	\$3,045.62	Not confirmed; case dismissed by attorneys for District of Columbia; new case filed Nov. 27, 1912.
Extension of Q Street NW.	969	441	Mar. 2, 1911	Aug. 26, 1911	Jan. 6, 1913	73,880.20	76,162.58	Confirmed Feb. 21, 1913.
Widening of Bladensburg Road.	1001	{ 4	Jan. 9, 1907	Jan. 23, 1912	July 3, 1912	6,810.13	7,375.13	Confirmed Aug. 7, 1912.
Minor street, square 2888.	1024	228	Feb. 16, 1909	Apr. 1, 1912	July 2, 1912	7,003.28	7,328.05	Confirmed Aug. 5, 1912.
Building line, Columbia Road between Fifteenth and Sixteenth Streets.	1025	.....	.....	Apr. 11, 1912	July 12, 1912	12,186.60	12,584.40	Do.
Minor street, square 2885.	1037	.....	.....	May 31, 1912	.....	.....	.....	Order staying proceedings June 21, 1912.
Minor street, square 16.	1039	.....	.....	June 12, 1912	.....	.....	.....	Cause dismissed by attorneys for District of Columbia Jan. 30, 1913.
Extension of Lamont Street NW.	1040	83	Mar. 1, 1912	July 14, 1912	Jan. 10, 1913	13,737.48	14,201.26	Confirmed Feb. 10, 1913.
Minor street, square 3532.	1041	.....	.....	June 19, 1912	.....	.....	.....	Case continued to Oct. 3, 1913.
Square 1214 (Corcoran School).	1047	.....	.....	Nov. 8, 1912	May 12, 1913	18,570.10	None.	Confirmed May 19, 1913.
Extension of Underwood Street to Piney Branch Road.	1048	.....	.....	Nov. 15, 1912	Feb. 10, 1913	1,413.20	1,800.00	Confirmed May 2, 1913.
Road along Anacostia River.	1049	.....	.....	Nov. 27, 1912	.....	.....	.....	Case continued to Oct. 3, 1913.
Establishment of building restriction line: South side Park Road and north side of Kenyon Street, both between Thirteenth and Fourteenth Streets.	1050	.....	.....	.....do	.....	.....	.....	Do.
South side Columbia Road between Fourteenth and Fifteenth Streets.	1053	.....	.....	Jan. 25, 1913	.....	.....	.....	Do.
Extension Rock Creek Drive.	1061	.....	.....	Apr. 30, 1913	.....	.....	.....	Do.
Fortis Davis and Dupont and Alabama Avenue.	1062	.....	.....	.....do	.....	.....	.....	Do.
Extension of Western Avenue.	1064	.....	.....	June 19, 1913	.....	.....	.....	Do.

*Condemnation cases—Continued.*

ALLEYS.

Location.	Court docket No.	Act No.	Act approved.	Case filed.	Verdict filed.	Verdict.		Action on verdict.
						Damages.	Benefits.	
Square 2815.....	866	.....	.....	Mar. 22, 1910	.....	.....	.....	Hearing continued to May 20, 1910.
Square 2843.....	988	.....	.....	Nov. 27, 1911	.....	.....	.....	Mandate court of appeals dismissed with costs Jan. 18, 1913.
Square 2921.....	1006	.....	.....	Feb. 6, 1912	.....	.....	.....	Order staying proceedings Mar. 15, 1912.
Square 2923.....	1019	.....	.....	Mar. 19, 1912	June 4, 1912	\$332.19	\$1,150.58	Confirmed July 29, 1912.
Square 2939.....	1020	.....	.....	Mar. 21, 1912	June 27, 1912	2,053.80	2,284.72	Confirmed July 29, 1912.
Square 2940.....	1028	.....	.....	Apr. 12, 1912	July 17, 1912	345.58	553.71	Confirmed Aug. 19, 1912.
Square 2807.....	1027	.....	.....	.....do.....	June 13, 1912	234.60	439.21	Confirmed July 15, 1912.
Square 2830.....	1029	.....	.....	Apr. 26, 1912	June 26, 1912	953.01	1,172.42	Confirmed July 29, 1913.
Square 2851.....	1031	.....	.....	May 10, 1912	.....	.....	.....	Order continuing hearing June 13, 1912.
Square 3049.....	1038	.....	.....	June 6, 1912	.....	.....	.....	Order staying proceedings June 21, 1912.
Square 377.....	1042	.....	.....	June 21, 1912	.....	.....	.....	Cause dismissed by District of Columbia attorneys Feb. 17, 1913.
Square 2892.....	1043	.....	.....	June 24, 1912	.....	.....	.....	Continued to Oct. 3, 1913.
Square 957.....	1051	.....	.....	Dec. 10, 1912	.....	.....	.....	Continued to Oct. 2, 1913.
Square 2537.....	1056	.....	.....	Feb. 5, 1913	.....	.....	.....	Indefinitely continued.
Square 1045.....	1057	.....	.....	Feb. 7, 1913	.....	.....	.....	Continued to Oct. 3, 1913.

## REPORT OF THE SUPERINTENDENT OF TREES AND PARKINGS.

WASHINGTON, D. C., August 19, 1913.

SIR: I have the honor to submit herewith my twenty-eighth annual report, dealing with the operations of the trees and parkings office for the fiscal year ended June 30, 1913.

## PLANTING.

The planting of young trees on recently improved streets to extend the system and the filling of vacancies existing in the established lines was one of the most noteworthy and important features in our work. Four thousand five hundred and seventy-one trees were transplanted from the nurseries to their permanent position on the streets, an increase of 747 over last year's record.

The planting of young trees continues to be a costly item in view of the existing high price of labor and materials and the necessity for longer hauls due to the rapid growth of the city.

Four thousand four hundred and seventy-two of the total number planted were set at the curb line, 70 in the public parking (3 of which were planted in the central parking on Fourteenth Street NW., north of Kennedy Street), 16 in school grounds, 4 at the public crematorium, and 9 in the Children's Hospital grounds.

## TREES PLANTED.

<i>Fall season.</i>		<i>Spring season.</i>	
Elms.....	240	Elms.....	385
Gingkos.....	199	Gingkos.....	63
Lindens.....	24	Lindens.....	80
Maples:		Maples:	
Norway.....	578	Norway.....	622
Sugar.....	80	Silver.....	86
Oaks:		Sugar.....	137
Pin.....	515	Oaks:	
Red.....	452	Pin.....	157
Sycamores.....	397	Red.....	48
		Sycamores.....	508
Total.....	2,485	Total.....	2,086

## NURSERIES.

The seed beds in the city's nurseries are well stocked with varieties used for street planting and all seedlings with the exception of the Norway maples are in good condition and are first-class stock. While the Norway maples are of hardy growth, they are unsuited for street planting because of their crooked stems, and the department is considering the purchase of a better stock.

The following table shows the number of seedlings transferred from the seed beds to the nursery rows:

Gingkos.....	2,103
Maples, Norway.....	2,438
Oaks:	
Pin.....	1,827
Red.....	1,022
Total.....	7,440

The installation of a 5-horsepower "Wagner" motor, having a speed efficiency of 1,750 revolutions per minute, in the parking commission shops at the E Street tree nursery, has reduced the cost of constructing wooden tree guards used in connection with the planting of trees at least 50 per cent, a considerable saving.

## TRIMMING.

Little systematic trimming was done during the year, but to offset this a great many individual requests for trimming trees, removing objectionable limbs, etc., were complied with. In executing orders for work of this nature in compliance with requests for the same any trees in the immediate vicinity of the location visited requiring similar treatment were given attention.

The office calls attention to the beauty and splendid condition of the silver maples in the northeast and southeast sections of the city, which were topped several years ago. The condition of the silver maples in the northwest section justifies a similar operation, but as funds can not be spared because of the pressure of other important work, this trimming can not be undertaken until the required sum is provided.

#### REMOVING.

The following table shows the kinds and number of trees removed during the year. Careful attention is always given to removal requests and many growths are saved each year by suggested changes in the location of driveways, vaults, etc. In the case of dead trees removed, the table gives the causes of their deaths as accurately as can be ascertained. Attention is again called to the fact that a number of trees are destroyed each year by the escape of illuminating gas, although there is a slight decrease in the number over last year.

#### Statement of trees removed during the year.

Ailanthus.....	12	Mulberry, paper.....	9
Althea.....	1	Negundo.....	59
Apple.....	2	Oaks:	
Apricot.....	1	Black.....	14
Ash.....	9	Pin.....	161
Beech.....	1	Pyramidal.....	4
Black gum.....	1	Red.....	120
Catalpa.....	16	White.....	67
Cedar.....	3	Osage orange.....	2
Cherry.....	3	Peach.....	3
Chestnut.....	2	Persimmon.....	1
Elm.....	159	Pine, white.....	16
Ginkgo.....	18	Poplars:	
Horse chestnut.....	4	Aspen.....	18
Hickory.....	6	Athenian.....	8
Japanese pagoda.....	1	Carolina.....	215
Linden.....	108	Lombardy.....	1
Locust.....	24	Tulip.....	22
Maples:		Sassafras.....	1
Norway.....	329	Sweet gum.....	3
Red.....	12	Sycamores.....	267
Silver.....	1,008		
Sugar.....	131		
Sycamore.....	2	Total.....	2,844

#### Causes of removals or deaths.

Dead, decayed, and dangerous.....	1,355
Inferior and condemned varieties.....	741
To relieve excessive shade.....	138
Street improvements, driveways, buildings, etc.....	270
Improvement of parkings.....	30
Improvement of alleys.....	18
Accidents and storms.....	279
To accommodate lamps.....	13
Total.....	2,844

Of the dead trees included in the above, it was ascertained that 285 were destroyed by illuminating gas, 22 by horse bites, 245 by drought, 11 by salt water, 124 by abnormal moisture supply, 40 by the mutilation of roots, 6 by being girdled, 63 by being filled around, 4 by frost blight, 5 by fire, and 24 by insects. The remaining were unexplained.

Trees at the curb removed.....	2,424
Trees in parkings removed.....	308
Trees in sidewalks removed.....	59
Trees in school grounds removed.....	8
Trees in roadways removed.....	21
Trees in alleys removed.....	18
Trees on private property removed.....	6
Total.....	2,844

## SPRAYING.

1. *Leaf-eating insects*.—The work of spraying the street trees of Washington for the extermination of leaf-destroying insects has given very satisfactory results; in fact, it is worthy of mention that never before have the trees been in such good condition during a season when these pests make their attacks. Last summer it became necessary to spray the lindens, Norway, silver, and sugar maples, sycamores, and other varieties infested with the fall webworm and the tussock moth, two of the worst mid-summer enemies to shade trees, but splendid results were obtained in checking their ravages.

Early in May of this year the elms throughout the city were sprayed with arsenate of lead, and it is thought that the elm-leaf beetle, which attacks this species, has been practically exterminated. In June of this year the fall webworm appeared on the lindens, Norway maples, and a few of the elms, but timely action by the department prevented its spread.

The following table shows the extent of spraying for leaf-eating insects during the year:

Ash.....	53
Elms.....	9, 144
Locust, honey.....	18
Lindens.....	9, 068
Maples:	
Norway.....	5, 089
Red.....	27
Silver.....	12, 928
Sugar.....	292
Sycamore.....	155
Negundos.....	339
Oaks:	
Pin.....	2, 022
Red.....	45
Poplars:	
Carolina.....	220
Tulip.....	429
Sweet gum.....	267
Sycamores.....	8, 833
Others.....	3
Total.....	48, 932

Unit cost of spraying (labor and materials), \$0.051.

2. *Sucking insects*—(a) *Plant lice or aphids*.—During June of the past fiscal year the department sprayed a majority of the tulip poplars growing on the streets, which were infested with small licelike creatures known as plant lice or "aphids," insects that suck the life juices by piercing the cuticle of the stem or leaf. This pest secludes itself on the underside of the leaf, exuding "honey dew," a sticky excretion which falls to the pavement, causing many persons to believe that the leaves are losing their sap directly. The leaves are losing their sap, but through the medium of the aphids' body.

Since a poison spray (arsenate of lead) would not be effective, because of the fact that this insect sucks the interior of the leaf, it was necessary to spray the infested trees with a whale-oil soap emulsion, which, when applied to the leaf surface, closes the breathing pores of the insect, thus causing suffocation. Less than 10 days after the application of the solution no sign of the pest could be seen except for the stain left on the sidewalk under the tree, which was caused by the falling sap.

Tulip poplars sprayed for extermination of the plant lice, 728. Unit cost of spraying (labor and materials), \$0.041.

(b) *Scale insects*.—Early in March, when the trees were still dormant, the office sprayed trees infested with the "gloomy scale," "tulip soft scale," "obscure scale," and the "Forbes scale." The scale insects are very small and live under the protection of a scale that forms over them, and in order to reach the insect and kill it the poison must penetrate this protection. Knowing that arsenical poisons would not be effective and that a contact poison must necessarily be used, the office, following a formula prescribed by entomologists of the Agriculture Department, sprayed the affected trees with a kerosene emulsion solution. While the effect of this spraying can not be determined for several seasons, the office feels sure that with subsequent applications of the solution satisfactory results will be obtained.

The following table shows the extent of spraying for the scale:

Gloomy scale:	
Maples—	
Norway.....	245
Silver.....	265
Obscure scale:	
Oaks—	
Pin.....	1,390
Pyramidal.....	50
Red.....	193
Swamp white.....	7
Tulip soft scale, poplars, tulip.....	420
Forbes scale:	
Elms.....	187
Maples, sugar.....	542
Lindens.....	1
<b>Total.....</b>	<b>3,300</b>

Unit cost of spraying for scale insects (labor and materials), \$0.176.

Total number of trees sprayed during the year, 52,960.

The excellent results obtained in the work of spraying the street trees of Washington may be attributed to the effective solutions used and the efficiency of the equipment and men engaged on that work.

#### CEMENTING.

During the past fiscal year the department gave considerable attention to the cementing of cavities in the trunks and limbs of trees.

This operation consists in the removal of all decayed and diseased tissues until nothing but the sound wood remains, and in some cases it becomes necessary to go into this sound wood to remove any existing discoloration or fungus. The fungus is really the germ, and if not removed continues its work of decay. After the cavity is carefully and thoroughly cleansed the walls are covered with creosote, the gas from which permeates the wood and destroys all living germs, serving as an insecticide as well as a fungicide. Gas tar is then applied to the interior and left for several days. The fissure is then filled with cement, sheets of felt being left at intervals between the filling to allow for any expansion or contraction caused by weather conditions.

A majority of the trees given attention would, within a period of about five years, be too far gone to respond to any treatment which might prolong their life, and in a short time be in such a decayed condition that their removal would become a matter of necessity.

The following table gives the number and kinds of trees cemented:

Acacia.....	1
Elms.....	62
Lindens.....	5
Maples, sugar.....	2
Poplars, tulip.....	5
Sycamores.....	7
<b>Total.....</b>	<b>82</b>
Cost of labor.....	\$290.00
Cost of materials.....	30.00
<b>Total.....</b>	<b>320.00</b>
Unit cost of cementing (labor and materials), \$3.90.	

#### CULTIVATING.

A great deal of work was done during the year in cultivating young street trees, which work is absolutely necessary to insure good growths and to allow them to derive the fullest benefits from rainfall.

#### MOWING.

Many uninclosed public parkings were mowed during the year, the necessity being recognized to rid the city of as many weeds as possible. Attention was also given to the maintenance and mowing of grass in front of the District Building, Union Station,

Center Market, Ashmead Place, public convenience station at Seventh Street and Pennsylvania Avenue NW., the parking around Washington Circle and Seventh Street and Louisiana Avenue NW., the slope at Twenty-second and Decatur Streets NW., and the park areas at Eleventh Street and Massachusetts Avenue NW.

#### REGULATION OF TERRACES.

The regulation of terraces throughout the city is proceeding satisfactorily, and in the recently built-up sections of the city the uniformity in their heights presents a pleasing appearance. Seven hundred and ninety-five applications were received during the year, and in determining action thereon approximately 550 inspections were made.

When three applications are filed in one day, requiring an inspection in Chevy Chase, one in Takoma Park, and one in Brookland, and the applicants are anxious to secure their permits the following morning, it is almost impossible to comply with their requests, owing to the inadequate method of conveyance. If the office was equipped with an automobile for these and other inspections, much valuable time would be saved, the office would cease to be a subject of criticism, and the efficiency of the service would be much improved.

A brief summary of the work performed by the office is as follows:

#### Comparative statement.

	1912	1913
Writing and execution of inspections.....	578	597
Additional terrace inspections.....	708	550
Issuance and execution of work orders.....	727	731
Locations visited in executing same.....	2,456	2,892
Official files acted on.....	447	502
Writing of indorsements thereon.....	592	750
Requests to surface division for paving, etc.....	21	31
Pay rolls and special vouchers forwarded.....	52	59
Requisitions for supplies, repairs, etc.....	93	125
Transfer of appropriation vouchers.....	13	3
Supply vouchers approved, recorded, etc.....	158	227
Superintendent's recommendations originating here.....	78	95
Gas reports forwarded.....	28	19
Locations thereon.....	131	100
Letters mailed to private individuals.....	195	321
Car-ticket and stamp reports forwarded.....	16	24
Replies to communications by post cards.....		60
Preparation and submission of property returns.....	4	4
Coping permits issued <sup>1</sup> .....		61

<sup>1</sup> This office assumed the duty of issuing permits for copings on Apr. 17, 1913, when the permit clerk was relieved of the work.

Attention is respectfully invited to the increase in the amount of clerical work the office was called upon to perform during the past fiscal year.

#### SUMMARY.

Trees in streets, parkings, sidewalks, school yards, and playgrounds at close of fiscal year 1912.....	100,787
Trees planted during fiscal year 1913.....	4,571
Trees removed during fiscal year 1913.....	2,799
Net increase during 1913.....	1,772
Trees in streets, parkings, sidewalks, school yards, and playgrounds at close of fiscal year 1913.....	102,559
Curb trees on streets at close of fiscal year 1912.....	99,867
Net increase of curb trees during fiscal year 1913.....	2,048
Curb trees on streets at close of fiscal year 1913.....	101,915

<sup>1</sup> In addition to the number removed above, 45 were removed from alleys, roadways, and private property, but did not diminish number included in official count.

Mileage of trees at close of fiscal year 1912.....	567.40
Increase of mileage of trees, fiscal year 1913.....	11.64
Mileage of trees at close of fiscal year 1913.....	579.04
Mileage of tree-planted streets, close of 1912.....	283.70
Increase of mileage of tree-planted streets, close of 1913.....	5.82
Mileage of tree-planted streets, close of 1913.....	289.52

NOTE.—Mileage is figured on the basis of 352 trees per mile.

### Expenditures.

[Streets, District of Columbia, 1912-13, parking commission.]

#### Labor:

Extermination of insects, clipping off caterpillar nests.....	\$30.50
Burning egg masses of tussock moth.....	56.63
Spraying for—	
Scale insects.....	380.25
Plant lice.....	15.50
Elm-leaf beetle (American elms).....	301.18
Tussock moth (lindens, sycamores, Norway and silver maples, etc.).....	493.25
Fall webworm (lindens, sycamores, Norway and silver maples, etc.).....	253.86
Total.....	1,531.17

#### Material:

Arsenate of lead.....	970.36
Gasoline.....	94.05
Lubricants.....	17.95
Kerosene.....	136.00
Fels Naptha soap.....	59.84
Whale-oil soap.....	14.24
Spraying machine accessories.....	56.07
Total.....	1,348.51

By balance of appropriation forwarded to 1913..... \$4,859.70

Funds expended for other purposes.....	1,980.02
Material.....	1,348.51
Labor.....	1,531.17
	4,859.70

[Streets, District of Columbia, 1913, parking commission.]

#### Labor:

Clerical and inspection work.....	\$2,077.88
Military duty with militia.....	45.00
Storm damage.....	172.37
Cultivating young street trees.....	2,896.54
Improvement, care, and mowing of parkings.....	3,344.04
Miscellaneous repairs to boxes, etc.....	683.15
Maintenance of nurseries (making 5,000 boxes).....	2,997.63
Removing dead, decayed, and dangerous trees.....	5,113.27
Trimming street trees.....	4,192.51
Planting trees (including lifting trees in nursery and digging tree holes).....	8,853.60
Cementing cavities, treating wounds, tree surgery.....	337.59
Maintenance of yard.....	1,670.44
Examinations for gas leaks in tree spaces.....	13.00
Labor Day payments to laborers.....	118.50
Total.....	32,515.52



## Materials, supplies, miscellaneous repairs, etc.:

Buggy and wagon findings and repairs.....	\$616. 42
Electric current.....	32. 70
Fertilizer and grass seed.....	103. 09
Forage.....	2, 348. 80
Stationery, printing, and office supplies.....	144. 94
Leather straps.....	397. 50
Installing electric system and motor in the E Street tree nursery.....	345. 01
Lumber for tree boxes.....	3, 021. 12
Lumber, miscellaneous purposes.....	154. 79
Wire, bolts, tin, nails, screws, etc.....	205. 76
Paints, oils, and glass.....	150. 38
Rope.....	35. 27
Soil.....	338. 60
Stable and blacksmith supplies.....	74. 51
Tools and agricultural implements.....	194. 94
Telephone calls.....	. 45
Photographic supplies.....	32. 03
Car tickets.....	5. 00
Fuel.....	41. 58
Drugs.....	6. 78
Cement.....	40. 39
Gas tar.....	21. 00
Roofing felt.....	. 61
Hose.....	42. 48
Automobile truck, accessories, repairs, etc.....	1, 788. 42
Gasoline.....	110. 00
Iron, steel, horseshoes, and pads.....	126. 76
Sundries.....	56. 85

Total..... 10, 436. 18

## Charges against appropriation:

Paving tree spaces.....	572. 68
Plumbing.....	40. 00

Total..... 612. 68

By appropriation, fiscal year 1913 .....	\$40, 000. 00
By repayments, fiscal year 1913 .....	1, 608. 85
Sum used from (\$5,000) 1912-13 appropriation.....	1, 980. 02

43, 588. 87

Labor.....	32, 515. 52
Materials.....	10, 436. 18
Charges against appropriation.....	612. 68
To balance appropriation unexpended.....	24. 49

43, 588. 87

*Expenditures from miscellaneous appropriations.*

[Exclusive of parking commission.]

	Direct charge.	Through repayment.
Miscellaneous trust-fund deposits.....	\$3,891.17	\$1,608.85
Electrical department, District of Columbia, 1913, lighting.....	36.00	-----
Schools, District of Columbia, 1913, repairs to buildings, etc.....	33.13	-----
Construction of suburban roads, District of Columbia, 1913:		
Jackson Street NE., Tenth to Twelfth; Tenth Street NE., Jackson to Kearney.	27.13	-----
Grading and improving Thirty-fourth Street NW.....	115.88	-----
Upshur Street NW.....	15.14	-----
Brothers Place SE.....	79.63	-----
Belmont Street NW.....	10.00	-----
Improvements and repairs, District of Columbia, 1912, Quarry Road entrance to Zoo Park.....	7.13	-----
Improvements and repairs, District of Columbia, 1913:		
Repairs to streets.....	251.38	-----
Assessment and permit work.....	451.09	-----
Alley, square 1043, pave.....	13.75	-----
Northwest schedule.....	9.75	-----
Southeast schedule.....	13.63	-----
Total.....	4,954.81	1,608.85

*Sums expended during the year for employment of per diem employees, paid from appropriation "Streets, District of Columbia, 1913, parking commission."*

1 copyist, 306 days, at \$3.25.....	\$994.50
1 copyist, 300 days, at \$3.....	900.00
Total.....	1,894.50

*Sums expended during the year for the purchase and maintenance of horses, carts, and wagons, together with amounts paid for cart and wagon hire.*

[These items included in material list.]

Horses, forage, wagons, and miscellaneous equipment and repairs.....	\$3,025.22
Cart hire, 1,195 plus days, at \$2.25 per day.....	\$2,690.49
Wagon hire, 1,390½ days, at \$4 per day.....	5,561.00
Total.....	11,276.71

Respectfully submitted.

TRUEMAN LANHAM,  
*Superintendent of Trees and Parkings.*

Capt. MARK BROOKE,  
*Corps of Engineers, United States Army,  
 Assistant to the Engineer Commissioner, District of Columbia.*

## REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

WASHINGTON, D. C., September 6, 1913.

SIR: I submit the following report of operations of the water department for the year ending June 30, 1913:

Cash collections for the year amounted to \$790,541.70, an increase of \$108,421.27 over those of the year preceding. Unexpended balances from previous allotments, deposits for special work, etc., amounting to \$125,153.97, bring the total available funds for the year up to \$915,695.67. Expenditures for all purposes amounted to \$854,477.38, leaving a balance of \$61,218.29, as against a balance of \$110,230.06; that is, the expenditures for the year exceeded the income by \$49,011.77, and were \$84,947.20, or 11 per cent, greater than the expenditures for the preceding year.

Mains were laid, varying from 3 to 36 inches in diameter and aggregating in length 138,506 feet (26.2 miles), at a total cost of \$212,479.48. Total length of mains now in

service, 3,031,997 feet, or 575 miles. Collections of water-main assessments amounted to \$138,693.75.

Some of the items of work of especial interest during the year were:

The laying of 36-inch main in place of two lines of 12-inch at Sixteenth Street and Spring Road, the latter having been put in in November, 1907, when the 36-inch main was broken by the settling of heavy fill in Sixteenth Street.

The extension of the first high service to 15 city blocks in the vicinity of Eleventh, Seventeenth, and H Streets and New York Avenue, formerly supplied by gravity, and the consequent increase in pressure of about 70 feet over this area.

The execution of a single main extension project in Massachusetts Avenue Heights, involving the laying of 8,000 feet of 12-inch and 28,000 feet of 8-inch main, with all usual appurtenances.

The erection of three steel water towers of 140,000 gallons capacity each, with necessary connecting mains, on the eastern side of the Anacostia River, one at Thirtieth and R Streets SE., one at Tenth Street and Alabama Avenue SE., and one at Good Hope, in the grounds of the Stanton School; water elevation in the two first named 246 feet above mean tide, and of the last, 350 feet.

The building and equipping of a pumping station at Eighteenth and R Streets SE. for the service of all territory lying on the east side of the Anacostia River and having an elevation of more than 70 feet above mean tide. This pumping station is equipped with internal-combustion oil engines and geared triplex plunger pumps. It will be put in service early in the next fiscal year.

The erection of new shop and storage room in rear of and connected with the District pumping station on Bryant Street.

The erection of brass foundry for production of small brass castings needed in water-department work.

The erection of two 5-ton electric yard cranes for use in handling heavy pipe and fittings.

The mean total daily water consumption for the year was 57,282,000 gallons, which is 4,708,000 gallons less per day than for the preceding year, a decrease of  $7\frac{1}{2}$  per cent. The per capita based on a population of 353,000 was 162, a decrease of 17 gallons, or  $10\frac{1}{2}$  per cent. This decrease is in part due to the unusually mild winter of 1912-13.

About 10,000 new house meters were installed, bringing the total number in use up to about 35,000. Fifteen thousand two hundred and seventy-one meters of all sizes were given bench tests for accuracy.

The pitometer division located and closed leaks aggregating 4,196,000 gallons daily in underground constructions, as set forth in detail in the report of this division given below.

A detailed statement of routine work accomplished is given in the accompanying tables, and much data of interest will be found in the reports of the several divisions.

A summary of the duties assigned to each division of the department and of the general results accomplished follows; each division and subdivision report is in general written by the head of that division.

#### DIVISION A.—*Maintenance and extension of distribution system.*

[J. S. GARLAND, assistant engineer, in charge.]

##### SUBDIVISION A2.—*General engineering.*

The work of this subdivision consists in the preparation of plans and estimates for water-main extensions and allied constructions, in all field work and records incident to the carrying out of these plans, and in engineering work of a miscellaneous character.

The subdivision is in charge of Mr. D. W. Holton, and consists of three field parties.

The work accomplished included the taking and recording of water pressures at various fire hydrants, investigation of water-service complaints, surveys for the location of valves, water meters of 3-inch size and over, public hydrants, fire hydrants, water mains, the making of miscellaneous surveys incident to building, etc.

The length of water-main surveys run about equals the length of mains laid, or 26 miles.

##### SUBDIVISION A3.—*Care of property.*

[W. V. ROBERTSON, in charge.]

The work of this division consists of receiving, inspecting, recording, storing, and issuing supplies for use of all branches of the department.

During the year there were received, inspected, and issued cast-iron water pipe and accessories as follows:

	Received and in- spected.	Issued.
Pipe, ranging in size 3 to 36 inches.....feet..	163,752	159,096
Valves, ranging in size 3 to 30 inches.....	782	948
Fittings, ranging in size 3 to 36 inches.....	4,503	4,019
Valve casings and covers.....	894	1,007
Manhole frames and covers, 21 in. h.....	42	51
Fire hydrants.....	471	239
Jute packing.....pounds.	13,310	8,325
Pig lead.....do.	261,800	380,300

Also during this time there were received, inspected, recorded, stored, and issued large quantities of miscellaneous hardware and plumbing supplies, engine-room and boiler-room supplies including 5,536 tons of coal, stationery, furniture, dry goods, groceries, electrical supplies, automobile supplies, forage, supplies for greenhouse, etc.

During the same period there were collected, weighed, and delivered to contractors miscellaneous old material to the value of \$2,843.28.

Unexpendable property under the control of this division has been accounted for. Unserviceable tools and material have been collected and condemned and are now awaiting sale.

To facilitate the work of this division and increase the efficiency of the employees the entire stock is being assorted and rearranged.

The force in charge of this work is composed of 1 clerk in charge, 1 rigger, 7 skilled laborers, 5 laborers, and 3 watchmen. Some additional labor is now temporarily employed in rearranging stock.

**SUBDIVISION A5.—Care and recording of valves, fire hydrants, street hydrants, etc., and care of reservoirs**

This subdivision is charged with caring for and making and maintaining complete records of all valves, fire hydrants, street hydrants, etc., with the execution of miscellaneous plumbing, and with general supervision of Brightwood and Reno Reservoirs; it is in charge of Mr. Humphrey Beckett, from whose report the following summary is taken:

Valves operated and cleaned.....	10,429
Valves packed.....	408
Valves on which minor repairs were made.....	21
Valves fitted with new stems.....	68
New valves installed in place of old.....	2
Four-stem valves fitted with new stems and gates complete.....	17
Three-stem valves fitted with new stems and gates complete.....	6
Number plates placed on casings.....	1,066
Casings cleaned.....	1,030
Valves uncovered.....	407
By-pass and air valves installed, 2-inch and under.....	17
By-pass and air valves repaired.....	2
Indicator posts:	
Erected in new locations.....	16
Replaced.....	9
Abandoned.....	1
Painted and numbered.....	70
On which caps were replaced.....	6
Indicator post valve locations made.....	47
Fire hydrants:	
Inspected.....	32,721
On which air intakes were placed.....	1,421
Repaired.....	1,457
Lubricated.....	3,762
Reversed.....	2
Drinking fountains for animals:	
Erected (new location).....	1
Location changed.....	2
Adjusted.....	3
Repaired.....	164
Cleaned.....	3,810

Sanitary fountains:	
Erected, new location.....	2
Repaired.....	33
Public hydrants:	
Erected, new location.....	3
Erected in place of old.....	28
Abandoned.....	14
Adjusted.....	2
Repaired.....	170
Catch basins cleaned.....	104
Drains repaired, cleaned, or adjusted.....	8
Wells cleaned or pumped out.....	5
Pumps:	
Inspected.....	2, 142
Installed, new locations.....	3
Repaired.....	72
Fitted with new dippers.....	80
Removed and wells abandoned.....	4
Street washers repaired, adjusted, etc.....	2
Lead connections made for stock.....	181
New services installed.....	11
Services repaired, adjusted, or reconnected.....	46
Smith cuts made.....	14
Intersections located.....	918
50-foot scale maps corrected owing to changes and new work.....	977
Index cards corrected owing to changes and new work.....	1, 219
New cards made.....	206
Cut-offs made owing to repairs or new construction.....	99
New mains charged.....	5
Valves inspected to check normal position, condition, etc.....	55
Valves restored to normal position.....	15
Changes made in service boundaries.....	11
Complaints of foul water investigated.....	26
Fittings strapped.....	37
Complaints of pressure investigated.....	9
Mains flushed where circulation is bad.....	315
Blow-offs fitted with standpipe for flushing.....	38

There were 1,902 written work orders for repairs received and recorded during the year.

Dividing lines between services were examined as follows:

First high.....	2
Second high.....	1
Third high.....	1
Fourth high.....	1

An indexed record is kept of all valves operated, stating position in which valve is left and condition of same at time of operation.

Miscellaneous work has been done as follows:

At Brightwood Reservoir: Each basin has been drained and cleaned three times during the year; installed 4-inch tile drain around lodge.

At Reno Reservoir: Each basin has been drained and cleaned twice during the year; installed a sink in tool house and kept plumbing in repair.

At Bryant Street pumping station: Installed all plumbing and drainage for three new shops, and installed sinks, one in garage and one in stable office; made all necessary plumbing repairs in buildings except the pumping station; installed 140 feet of temporary service for mixing concrete in east property yard; placed sprinkler valves on standpipe around lake.

Samples of water are collected twice each week from Brightwood and Reno Reservoirs and delivered to the chemist at the filtration plant.

Inspected windmill construction at Stanton and Garfield Schools and installed a 500-gallon tank in each building.

Kept plumbing in repair at Camp Good Will.

Examined all blow-offs and air valves on trunk mains.

Laid temporary services at Carroll and Cedar Streets and Blair Road and Cedar Street, Takoma Park, D. C.

Installed four gauge boxes and connections for recording gauges.

Inspected 36-inch steel pipe each week on Sixteenth Street Bridge.

Laid 270 feet of temporary service at Stanton School and 400 feet at Thirty-first and R Streets SE., for mixing concrete for water towers.

Installed all plumbing, drains, fixtures, etc., in new pumping station and lodge at Eighteenth Street and Minnesota Avenue SE, and for Venturi meter at this location.

Installed 51 feet of 1½-inch galvanized service at Walter Reed Hospital.

Installed two hydraulic valve operators and made connections for three more to be installed.

SUBDIVISION A6.—*Laying mains, erecting fire hydrants, repairing leaks, etc.*

[Mr. S. H. HARDING, foreman in charge.]

All miscellaneous construction work, except of buildings and machinery, is done by this subdivision. For a statement of routine work accomplished attention is invited to Tables 3 and 4, appended hereto, where such work is described in detail. As will be noted, the total length of mains laid was about 26 miles.

The total number of leaks in water mains and appurtenances reported to this subdivision during the year was as follows:

	Trunk mains (16-inch and over).	Service mains (3 to 12 inch).	Service pipes (2½ inch and under).	Total.
Breaks.....	10	64	.....	74
Joints leaking.....	40	490	.....	530
Unclassified.....	.....	39	644	683

In addition a large number of false reports were received and investigated. The leaks here referred to are such as showed on the surface of the ground and include none of those found by the regular underground survey carried on by Division F.

SUBDIVISION A9.—*Miscellaneous drafting.*

This subdivision is in charge of Chief Draftsman F. W. Albert. The following is from his report:

Drawings and tracings made.....	1, 132
Projects made.....	174
Cards forwarded to the assessor.....	479
Communications written.....	559
Foreman's plats recorded.....	671
Files forwarded to the assessor.....	166
Locations recorded, no plat necessary.....	118

These statistics show an increase of 10.5 per cent in the number of drawings and tracings made, and an increase of 5 per cent in the number of communications written. The items having to do with water-main extensions—namely, projects, cards to the assessor, foreman's plats recorded, and files to the assessor—show a proportionate decrease with the respective figures of last year. There was one man more acting as assistant draftsman than during the previous year.

With the exception of the first two items, each of the listed items was done by a single man, not necessarily the same man, however. The average number of drawings and tracings and projects per man, is 141.5 for the former and 43.5 for the latter, assuming that eight and four men respectively worked on the two jobs.

The report which follows presents in greater detail the work performed by this division during the past fiscal year.

The most important drawings made were those for the Anacostia pumping station and lodge at Eighteenth Street and Minnesota Avenue SE. These include 11 linen sheets 18 by 24 inches and 26 paper full-size detail sheets relating to the construction of the building, and about 8 sheets relating to the layout of yards, fences, and suction and discharge mains on the site of the new station. This division also supervised, in a general way, the construction of the buildings.

It is interesting to note the amount saved by the water department by having these plans drawn by this division. The cost of the building itself, exclusive of equipment, was \$11,800.75. Assuming that an architect would have charged the flat percentage of the American Institute of Architects, 6 per cent, the cost for the plans and supervision of construction would have been \$678.05. The drawings made by the division cost \$369.38, or 3.3 per cent of the cost of the building. This cost does not include the work of supervision by the chief draftsman, due to the fact that because of the multiplicity of his duties his time on this particular work could not be computed.

Other important drawings made were as follows:

Proposed fences around site of District pumping station, Bryant Street property yard, and water tower at Tenth Place and Alabama Avenue SE.

Carpenter shop and meter storeroom in rear of District pumping station.

Varnish shop in property yard west of District pumping station.

Tapper's wagon used in engineering work.

Location plan of Venturi meters and recording vault in Fourth Street, south of Bryant Street NW.

Brass foundry in yard south of District pumping station.

Wagon shed in yard south of District pumping station.

House for motor in pump pit, Union Station Plaza.

Layout 16-inch water main across Benning Bridge.

Plans of foundation piers for runways of electric cranes for property yards at District and Anacostia pumping stations.

Chart showing organization of the engineer department, District of Columbia.

Chart showing organization of water department, District of Columbia, in effect for fiscal year beginning July 1, 1913.

A number of drawings were made to show the Beale-Moore hydraulic operator applied to valves of this city.

Besides these drawings, there were some of less importance made, showing smaller pieces of apparatus used in the office or shops, in the field, or at the pumping station, reservoirs, or lodges.

The most important routine work of the division, and one of the most important of all its duties, is the plotting of the notes as taken by the engineers in the field. These are drawn very accurately to scale on cards 8 by 10 inches, called foreman's plats, and illustrate exactly the work as completed by the construction gangs. They show mains, valves, hydrants, all connections, the removal, lowering, or changing in any form of mains or fittings, and the addition of special parts on old work, etc. The work on the plats, when checked and approved, is finally recorded upon all maps in the department, and the plats are filed away for future reference. The number of foreman's plats thus recorded constitute the fifth item in the list preceding this report.

The largest plat made by the division in the past year was that showing the water mains in Massachusetts Avenue Heights, where 5,458 feet of 12-inch, 22,376 feet of 8-inch, and about 125 feet of 6 and 4 inch water mains were laid.

Projects for water-main extensions are made from the records of the several departments of the District, and show the assessor's office designation for the property abutting the proposed main, the existing water mains, gas mains, sewers, electric conduits, character of surfaces to be cut, curbs, etc. They are made for all water-main extensions applied for by the public, recommended by officials such as the health officer or chief of fire department, or deemed advisable by this department, and tending toward the betterment of the service.

Carrying out the order of March 8, 1908, of the commissioners, cards were sent to the assessor showing the location and giving a brief description of work of laying water mains which are ordered by the commissioners. These are made up and forwarded on the day that the work of laying the main is begun. The new jobs are noted by an assistant draftsman from the daily morning report of the foreman of the department, and cards are immediately made and forwarded to the assessor. The assessor is thereby enabled to indicate as pending assessments such property as may be subject to special assessments for water mains.

Communications written include all reports on projects and files passing through this office pertaining to water-main extension, existence, location, availability, etc. Letters including estimates for private connections to water mains are also placed under this heading, as are letters giving general information on any topics which might be discussed in the letters of the writers. Weekly reports and post cards follow on all information concerning water-main locations and fire-hydrant pressures given out over telephone are numbered in the communications written.

After the tracing for a project has been drawn a blue print is made and forwarded to the assessor. From this the assessment against property abutting the proposed water main is estimated and the property represented in the petition (if application has been made) and the property previously assessed for water main is represented on the print in different colored crayons. The number of files forwarded to the assessor covers this work.

The item "Locations recorded, no plats necessary," includes information relative to existing water mains or fittings which has, in many cases, been lacking or insufficient, and which is turned to this office through such sources as the leak gang, the water registrar's office, the pitometer division, etc. If the data turned in contain new information the maps are posted accordingly, and the sheets containing the data are filed for reference.

All of the foregoing work is routine in character and is itemized weekly in the reports of the division. Some other duties which are also routine in character are here described.

One of the most important duties falling to this division is that of giving information to the general public. The questions asked in the majority of cases refer to the location, depth, existence, or availability of mains or fittings; the questions in many cases, however, are complex and involve the work of the department as a whole. There are also numerous questions asked about the source and supply of the water used in the city, and while these matters are not under the jurisdiction of this department, the inquiring persons are told as much as the meager records in the hands of this department on those questions warrant. Questions wholly foreign to water-department subjects are also often encountered.

It has been the duty of this division to post daily the log in the office of the superintendent, which is designed to show graphically the results, such as pumpage in the several services, coal consumed,  $\text{CO}_2$  in flues, etc., attained at the District pumping station; the temperature of air, rainfall, etc. Daily averages for the month have been computed and posted, after which daily averages for the year have been posted. It is very easy, by comparing the daily averages for the several years, to ascertain the difference in the various elements of the log.

Paralleling this work is the work of posting the work-in-progress maps in the office of the superintendent and the assistant engineer. The morning report of the foreman of the department is consulted, and from this is learned the location and nature of a job and the foreman in charge of the work for the day. From this report is also obtained information concerning the completed work. Cards kept by the miscellaneous clerical division are also consulted. When the information is obtained from the report, the maps are posted by means of pins with different colored heads and small squares of white cardboard to show the location of the jobs, the foremen in charge, the origin of or reason for the work, and show in a similar manner what work is ordered and what is merely applied for.

In the early part of the year it was deemed advisable to change the map immediately upon receiving word that a certain foreman had changed the location of his work rather than wait until the following morning to post the change when it was noted on the foreman's report. In other words, the maps, after the time when the change was made, instead of being posted only once daily are now kept absolutely up to the minute. Word of the foreman moving is received over telephone from the operator at the District pumping station, upon which the maps are immediately changed to indicate the new work. The maps have been checked thoroughly in the course of the year to insure correctness.

The work of posting the photograph albums in the office of the superintendent has been continued throughout the year.

All private water connections with the public water main which are 3 inches or more in diameter are drawn up immediately upon completion of foreman's plat for the job on small "green connection cards" and forwarded to the office of the water registrar for guidance and information in making proper meter accounts, charges, etc.

The organization chart of the water department has been kept to date by data obtained at the beginning of each month from the chiefs of the several divisions. New prints were made and distributed once in course of the year.

Acting upon the order of the engineer commissioner a chart was constructed by the division showing the complete organization of the engineer department. In order to obtain the necessary data for the chart it was necessary to go to each separate department, make an individual chart for each, and then consolidate the several departments on the sheet under the proper heads.

This chart and the one showing the organization of the District government has been kept posted to date by this division.

Water pressures were taken on the 45 designated fire hydrants located in various places over the entire District throughout the past fiscal year by members of division A2. The figures thus obtained were given to division A9, who computed from them the hydraulic heads of the several hydrants. The pressures were recorded on special cards and in a special book kept for the purpose. The hydraulic heads, when computed, are posted on a special map drawn up every two months for inspection and information of the superintendent. These maps, in addition to the hydraulic heads, show the water-service areas and the trunk water mains. It was discovered that the cost of producing the pressure maps could be greatly reduced by having lithographed at a unit price of less than one-third the cost of the hand-made maps, at a proportionate saving to the department.

Beginning July 1, 1912, the schedule for water connections 3 inches or more in diameter which was adopted for the year previous, at the suggestion of the Master Plumbers'



Association was discontinued, and a flat rate for all 3, 4, and 6 inch connections with water mains 12 inches or less in diameter was adopted. It was thought that a water connection of the same size should cost everybody the same sum, inasmuch as the property owner was not responsible for the location of the main which abutted his property.

The costs of the long connections will in the end balance the costs of the shorter connections and at the same time establish an absolutely equitable cost for private connections.

A report made out by the leak gangs of their work of locating and repairing leaks is sent to this division for record. The leaks are frequently in very old mains, and it often happens that definite records about the location and depth of these mains are unavailable. By checking with these reports many mains whose location has been doubtful or unknown have been located definitely. The checking of these reports is performed daily.

Cards made out by the tapper when taps are made in water mains are forwarded to this division giving locations of the mains tapped. These cards help in the same manner as do the daily leak gang reports, and through them we are gradually perfecting our system of water-main map records.

In the early part of every month this division has noted from the records in the surveyor's office the subdivision of all parcel properties, and has ascertained whether or not by the subdivision they have become liable to assessment for abutting water mains which existed before the subdivision occurred.

From time to time in the course of the year work has progressed on the 100-foot scale maps of the northwest, northeast, and southeast counties, and several have been completed. As these were completed, two tracings were made from each, one for the records in room 310, the other for the records in the water registrar's office. These maps show all mains, valves, hydrants, fountains, and special private service pipes laid by the water department. The map tracings in both offices have been kept posted to date by the division and are changed to conform to all new or replacement work immediately after record of the work is received in the office. As the map tracings have become very much dilapidated by constant use, they have been replaced by new tracings. The covers and bindings for the 50 and 100 foot scale map tracings were replaced during the year. These new covers bind more securely and are much easier to handle for the insertion of new tracings. Instead of being bound by cord entwined in and out of a heavy leather-covered cardboard, causing a great waste of time in fastening, they are made fast by binding a strip of aluminum at one end of the maps by four thumbscrews. These are easily removed for the insertion and removal of tracings.

The six sections of the 300-foot scale wall maps of the District have been kept posted to date to show changes in and additions to the distribution system as they have been made by the construction gangs, and all new subdivisions as recorded by the surveyor's office. The large scale of these maps and the great area covered by each section render these maps very valuable in the work of the office, both in the extension of the system and in segregation of service areas. They show all mains, valves, hydrants, water-service areas, and fountains in the District.

The old set of 300-foot scale tracings, which has been in constant use since 1906, had become so very much worn that it was replaced at the close of the fiscal year by a new set of 300-foot scale tracings. Work on these new tracings has been carried on whenever the routine work of the office would permit, and the tracings now cover the area of the entire District. When these tracings were completed, May 28, 1913, 20 sets of 300-foot scale blue prints were made, service lines marked upon them, and distributed to the leak gangs, foremen, water registrar's office, and to other officials whose work in the field demands a knowledge of the layout of valves, mains, etc. Previous to this, about January, 1913, 20 sets of the blue prints were likewise distributed, making a total of 40 sets of 300-foot scale blue prints distributed in the past year. These prints have proved very useful in making cut-offs and in locating the mains, valves, hydrants, fountains, etc., all of which are clearly shown thereon.

As some of the more complicated and important street intersections are necessarily somewhat indistinct on such a small scale, an enlargement was made of each one which could not be read clearly and placed in a convenient place near the intersection. In this way mistakes can be avoided and the maps used with greater facility.

The work of copying upon permanent cloth records the old, dilapidated maps, most of which were made some 15 years ago, has been in progress throughout the past year. It is the intention of the division to have all maps in perfect condition, and to this end the very old, worn, and torn paper records are being replaced. Before the old records are destroyed the copies are checked and rechecked, in order that all information on the former is sure to have been conveyed to the latter during the transfer. This work is carried on only when the regular work will permit.

At the beginning of the last fiscal year much time was spent in originating and developing a time and work distributing system which should take the place of the

old time system used the year previous. The latter, while sufficient from which to obtain the desired data, involved too much time and labor to get the results. A book was given each man, in which he recorded each day the work performed, with the job number and time upon the work. For data for the weekly reports these books are collected for reference. After the weekly report is made the books are returned. This permits the easy and correct compilation of the weekly report.

The "Work assignment board" which has been used nearly all the past fiscal year has two sets of hooks assigned to each member of the division. One of these sets is labeled "work in hand" and the other "future work." A card is made for every separate job undertaken by any of the draftsmen. On the former hook are placed all job cards calling for the work upon which a man is actually engaged. On the other set are placed cards which designate work to be taken up at a later date, and when the "future work" is undertaken the card is transferred to the "work in hand" hook. There are also sets of hooks for planned work and for unplanned work. This board has proved a valuable asset to the division. It enables the draftsman in charge to grasp the entire work of the division at a glance. He can tell immediately what each man is working on, what work he has ahead of him, what work is ahead of the division, etc. He can tell by various colored cards what is to be done weekly, daily, monthly, etc. In other words, the work, present and future, which the division must handle is represented in a manner both clear and forcible. When jobs which the cards call for are completed, they are so marked, and the time and dates entered upon them, after which they are filed for future reference.

The work of passing schedules of work to be done by the surface department has continued throughout the year. This work is carried on to prevent the unnecessary cutting of newly made pavements by subsurface work. The schedules show the job number (surface department), the location of the job, and the nature of the work to be done. If the water department has no work in a location called for, the job is "passed." If work is contemplated, the job is "held up" and marked "work to be done." When the water department has completed its work, a release on the job being "held" is sent to the surface department and, as far as the water department is concerned, the surface work proceeds. In this way the water department is enabled to get much of its work done without having to cut pavements, since it is done after the old pavement is removed and before the new pavement is laid, or is done before any pavement whatsoever is laid. It assists the surface department in that by doing the subsurface work in advance of new pavements, much unnecessary cutting of the pavements is avoided.

Because of the uniformity of the results obtained, all of which showed generally an absence of injurious matter, the posting of information contained on the sheets made out by the United States Engineers' Office showing microscopic organisms in the waters of Reno and Brightwood Reservoirs was discontinued.

A list of alley names, started during the fiscal year 1912, was worked on to a small extent in the past fiscal year. The object of this work is to get one name for each of the named alleys in the city. Lists from the health office, electrical department, post office, and some private organizations were used, together with those from such sources as Boyd's City Directory, etc. These various sources of information often contained different names for the same alley, causing confusion when reference to those alleys was made. In order to eliminate this confusion, this division endeavored to pick out the correct name for each alley, and having done so, list them for the information and instruction of those interested.

It was considered very desirable to publish a pamphlet which would describe briefly yet intelligibly the history of the Washington water supply, its operation and maintenance, and finally the distribution of the water to the consumers. This was started in the year 1912, when the matter was taken up in considerable detail. In the course of the past year the history has been investigated thoroughly and much valuable data have been collected. In hand with this work was the work done in preparation for a proposed exhibit to be held for the public, showing growth and work of the water department. While this question occupied only a little of the time of the division, many statistics were gathered from which interesting comparisons can be made.

The fire hydrant index book, started fiscal year 1912, was completed during the year just ended and now contains the locations, elevations, dates of setting, and make of all fire hydrants in the District of Columbia. These are all carefully indexed, with the job number under which the hydrant was set, and altogether forms a very valuable part of the official records.

Work of revising indices to the miscellaneous maps and drawings has received special attention during the past year, and a new index for the miscellaneous maps and one for the drawings are well under way.

Several interesting, instructive, and helpful diagrams were made by the divisions in the past year. These may be named as follows:

Mean daily consumption for December, 1911, and January, February, and March, 1912, with temperature of air.

Mean daily consumption for March, 1906-1913.

Mean daily consumption for March and November, 1906-1913.

Mean daily consumption for January, 1912, and 1913, with temperature of air.

Method of procedure with work incident to laying public water main.

Method of making up a project for public water main extension.

In order that the work of any individual member of the division might continue without inconvenient difficulties and delays in his absence from duty, each member wrote a clear and complete description of all work performed by him. These descriptions are a very valuable record in part and as a whole, for it can be readily discerned that in case of emergency they would greatly help an inexperienced person to grasp immediately the work to be done, and thus to add to the efficiency of the man and consequently of the division.

From time to time during the year this division has prepared maps for the Engineer Commissioner or his assistant, showing water service areas, trunk mains, etc. There have been made also several sketches for parts of office equipment for the assistant to the engineer commissioner.

A sheet showing summary of costs of work and material for the water department has been posted each month, prints obtained and distributed to the officials and persons interested.

A table follows showing the cost of making plats, projects, maps, etc.:

No.	Work.	Average cost each.
43	Plats for job No. 2556 (drains to hydrants).....	\$0.90
30	Plats for job No. 2197 (valves in place of old).....	.94
32	Plats for job No. 2195 (fire hydrants in place of old).....	1.06
140	Plats for miscellaneous work (assessment and deposit jobs, etc.).....	1.25
245	General average for all plats.....	1.04
84	Projects for water-main extensions.....	1.08
(1)	50 feet, 100 feet scale water-main maps.....	
79	50 feet, 100 feet scale water-main map tracings.....	.96
29	300 feet scale-map tracings.....	8.78
240	300 feet scale blue prints.....	3.83

<sup>1</sup> There were not enough maps made from which to compute an average cost.

<sup>2</sup> The figures here refer to a set of 300-feet scale blue prints. Each set contained 29 prints. The work of printing and the material cost \$3.17, while the cost of the work put upon them by this division amounted to \$0.66.

While the plats and projects were no more difficult than those of the previous year, there was a slight increase in the cost of production per plat and per project. This can be attributed to the facts that there were three new men broken in on the work in the course of the year, and that the compensations of the experienced men were increased.

Besides duties which have been classified above, there are some of a general nature which need only to be mentioned. They are such duties as miscellaneous lettering, indexing records and maps, changing and correcting drawings and blue prints, indexing and correcting mechanical drawings, computing and checking weight of wrought and cast iron pipe and fittings, etc.

As the fiscal year came to a close the division was occupied upon several interesting jobs. One of these was the designing of a proposed municipal garage for the housing of all motor vehicles used by the District of Columbia. This division will have the designing of the building, the preparation of specifications, and when the building is started, a general supervision of construction.

Work of indexing all samples of earth taken from excavations made by construction gangs in various parts of the city is under way. The work of collecting these samples was started during the fiscal year 1909. The index being compiled will enable the public to obtain, through the department, information concerning the subsoil in any part of the District where samples have been obtained.

Work of preparing a chart to show changes in the water department organization which became effective July 1 of this year was completed the latter part of the past year. Besides the actual work on the chart, a large amount of time was put on a new system for recording work done, time consumed, job costs, etc., which affected the

whole department, and which prove a great help in computing job costs with all other expenses of the department, as a whole or by divisions.

Under the new system, each employee of the department, except ditch laborers, whose time is recorded by foremen in charge, sends in, daily, a signed statement charging his time to the jobs worked on and indicating total time on duty, time of arrival at work in the morning and after lunch, and time of departure for lunch and at close of day. These statements are signed by the subdivision heads and go to the division chief, who, after approving them, sends them to the time clerk. The time clerk charges the proper time against the jobs as recorded on the statements, and computes job costs and other necessary accounts.

#### SUBDIVISION A10.—*Telephone switchboard.*

A brief summary of the chief items of work done during the year follows:

Recorded 1,666 leaks; 921 fire hydrants in service; 835 fire hydrants out of service; 3,589 hauling orders; 2,370 reservoir elevations; 366 daily reports of water consumption; 685 fire alarms; 6,111 leakmen's reports; 6,152 cut-offs by the water registrar; 140 cut-offs by the pitometer division; 591 locations of new jobs; 28 no water complaints; 3 low-pressure complaints; 95,550 telephone connections; 87 messages carried by the messengers. One thousand eight hundred and twenty-six work orders were issued for repairs to street hydrants, fountains, etc.

The telephone switchboard is connected by means of 4 lines with the Chesapeake & Potomac Telephone Co., by 2 lines with fire-alarm headquarters, 2 lines with police headquarters and 32 lines with the various divisions and branches of the department, reservoirs, etc.

H. C. Fowler, chief operator, is in charge of the work.

#### DIVISION B.—*Stables and transportation.*

This division, under G. A. von Dachenhausen, is charged with the care and maintenance of the water department stables and with all hauling and miscellaneous transportation, shoeing of horses, etc.

Following is a summary of the principal work accomplished:

Men employed daily in connection with the stable and transportation: Foreman 1, blacksmith 1, blacksmith's helper 1, drivers 31. Maintenance of roads furnished 3 laborers and watering cart.

The following have been furnished with transportation: Four to 11 foremen with teams to haul material and move dirt; two 4-horse trucks and 3 to 12 hired teams to haul pipe and fittings; engineer division, 2 single teams; foreman, 1 single team; timekeeper, 1 single team; pitometer division, 5 single teams; paver, 1 single team, water registrar, 1 single team; value division, 3 single teams and 1 double team; fire-hydrant division, 2 single teams and 2 double teams; miscellaneous hauling, 3 single teams and 2 auto trucks.

In addition to routine work the following was hauled:

##### Cast-iron pipe:

36-inch.....	tons..	628
30-inch.....	do.....	13
24-inch.....	do.....	5
20-inch.....	do.....	173
16-inch.....	do.....	162
10-inch.....	do.....	5
12-inch.....	do.....	1,908
8-inch.....	do.....	4,128
6-inch.....	do.....	132
4-inch.....	do.....	88
3-inch.....	do.....	27

##### Flange pipe, 12-inch.....

Steel pipe, 36-inch.....	lengths..	55
Terra-cotta pipe, 24-inch.....	do.....	36
Fittings:		33

48-inch.....	tons..	25
36-inch.....	do.....	52
30-inch.....	do.....	3
20-inch.....	do.....	5
Miscellaneous.....	do.....	229

Miscellaneous flange fittings.....	do.....	15
Sleeves, 36-inch.....	do.....	7

Valves:		
20-inch .....	lengths..	1
16-inch .....	do.....	2
12-inch .....	do.....	7
8-inch .....	do.....	6
Miscellaneous .....	do.....	4
Fire hydrants .....	do.....	113
Lead .....	do.....	150
Machinery .....	do.....	84
Soil .....	cubic yards..	207
Sand .....	do.....	627½
Gravel .....	do.....	858
Broken brick .....	do.....	12
Broken stone .....	do.....	3
New brick .....	do.....	4, 200
Portland cement .....	barrels..	1, 643
Loads of freight:		
1-horse wagon .....	do.....	28
2-horse wagon .....	do.....	279
Shoes .....	sets.....	966

DIVISION C.—*Inspection of machinery, pipe, specials, etc., at place of manufacture.*

During the year two inspectors were employed inspecting cast-iron pipe and special castings made for this department by the Camden Iron Works and the Lynchburg Foundry Co.; 3,580 tons of pipe and 285 tons of special castings were inspected.

DIVISION D.—*Revenue and inspection.*

For a statement of the work of this division attention is invited to the report of the water registrar, Mr. G. W. Wallace, appended hereto.

DIVISION E.—*Miscellaneous clerical.*

This division is charged with all work relating to records of contract material delivered, preparation of vouchers for contract and open-market purchases, transfer vouchers for work done by the department on deposit of cost, or for other departments on account; with transmission of all papers to their proper destinations; with keeping of all accounts relating to the employment of labor, expenditure of material, job costs, etc., and with making requisitions for material as called for by other divisions, and the handling of all miscellaneous correspondence.

During the year 81,258 papers were received and forwarded to their various destinations, viz, 3,015 vouchers, 739 requisitions for material made, 1,417 letters and 314 cards mailed, 792 official letters written, 1,225 work orders issued, 1,648 files received and forwarded, 1,152 pay rolls prepared, 45,547 miscellaneous papers handled, 1,183 records made on cards, 716 letters filed, 470 transfer vouchers forwarded for payment, and 23,040 material slips checked, entered, and filed.

Quarterly returns of unexpended property have been forwarded to the auditor.

The purchasing officer has been notified monthly of material delivered, and the chief clerk, engineer department, of construction work done under contract; from these notices vouchers have been prepared and forwarded for payment.

Transfer vouchers have been forwarded to the auditor for work done during the year for other departments of the District, the United States, and on deposit of the estimated cost, the amounts being credited to the appropriation.

Repairs were made to two service pipes found leaking, at a total cost of \$12. Bills were sent to the owners, who reimbursed the department.

Mr. W. C. Small, clerk, has charge of this work.

DIVISION F.—*Pitometer surveys for the detection of waste.*

The work of this division is under the direction of Mr. Paul Lanham, from whose report the following was taken:

The routine water surveys for the detection and prevention of waste were made during the year almost exclusively in the gravity and first high services. A number of miscellaneous square tests were made in the Reno service, and trunk main tests were made generally throughout the city. Special work performed consisted of the determination of the flow of water into Federal buildings for the officials of the Washington Aqueduct, measuring the consumption of the Washington Terminal power

plant while the meters were by-passed during inauguration week, and a test of the consumption of water at the fountains in the Executive Grounds. The experimental work on mechanical recorders, started in 1911, was completed, a type of instrument having been perfected which will prove valuable in the future work of this division.

The results of the year's work were substantial and indicate not only that the quantity of underground leakage per square is much less than formerly, but that new leaks, which are constantly occurring in pipes previously left in water-tight condition, are being found within a short time after their occurrence.

The detailed night subdivision tests were made in the same manner as has been the case for several years, but it was found necessary to carry the subdivision of the flows to a much finer degree than heretofore, because the average waste per leak is very small compared to what has previously been the case. This is a natural result of the repeated surveys of the districts, the larger and more easily located leaks, of course, being found first, leaving the small and obscure ones to be found by the resurveys. This tends to make the work of this division more difficult each year, but it is partially offset by the increased experience of the inspectors and the improvements in instruments.

The trunk-main tests were made in all of the districts surveyed, and in addition a number of mains were tested where leakage was suspected. Only one main was tested on which no previous test has been made, and this was found in good condition. With the exception of mains in the third high service and a 36-inch main in the first high service, at least one test, and in the majority of cases several tests, have been made on all trunk mains in the city where shut-offs could be secured. They were found in excellent condition, the few leaks detected being on caked joints, with the exception of a break on the 30-inch first high service main to Anacostia.

The work in the gravity service embraced all of that territory, with the exception of districts E and F. (See photograph for district boundaries.) A survey of E was omitted, because that district was the last to be surveyed during the previous year. Work was started in F in the latter part of July, but the complete figures were not available for this report.

In the first high service all districts were surveyed except G, which was the only district surveyed the previous year.

Summarizing the results of the surveys of all districts and including the results of the trunk mains and miscellaneous tests gives a total underground leakage found and prevented of 4,196,000 gallons per day. Reference to the statement which accompanies this report will show the relative quantities of leakage chargeable to the various sources. Comparison of the various items of this year with the corresponding items of 1911-12 shows that during the past year more leaks were found on the mains and less on the services. This is a favorable sign, as it is very probable that most of the leakage overlooked on previous surveys was on the mains, it being much more difficult to detect and locate than on the services. A total of 48,437 service pipes were examined and 26,397 houses inspected. Of the houses inspected, 3,725, or 14.1 per cent, were found with defective fixtures. This percentage is considerably lower than 15.6 per cent, which is the mean for the three previous years, and indicates that good work is being done jointly by this and the water registrars's divisions toward the reduction of waste from this source. The installation of meters will dispose of practically all of this class of leakage, but as the work of this sort is necessarily slow, house inspection will be continued by this division in all premises yet unmetered.

The photographic recorders were used continuously during the year, obtaining charts of the water consumption of all permanent districts throughout the city. The data thus obtained is recorded and is of increasing value to us in our routine work, as we are able to make comparisons of conditions in the various districts for periods extending over several years.

A slight reduction in the force of this division was made about the close of the year for purposes of economy and efficiency. The general condition, however, was excellent during the year and the increased experience of the inspectors and field men generally gives us an asset not to be ignored.

#### SUPPLEMENTS.

- A, statement of trunk-main tests.
- B, statement of district surveys.
- C, statement of year's results.
- D, statement of miscellaneous night tests.
- E, statement of district measurements.
- F, chart, effect of pitometer surveys on water consumption.

## A.—Trunk main tests, 1912-13.

Location.	Size.	Service.	Dist- rict.	Date.	Shut- off.	Rate per day.	Flow due to—
11th St., L to R Sts. NW.....	<i>Inches.</i> 24	First high...	K.....	1912. July 7	O. K.	Gallons. 5,400	Joint, 6 by 24 inches cross, 11th and N.
11th St., R to U Sts. NW.....	24	.....do.....	K.....	July 7	O. K.	.....	
6th and C Sts. to 4th and Col- lege Sts. NW.	48	Gravity.....	A.....	July 28	O. K.	.....	
6th and I Sts. NW. to 4 $\frac{1}{2}$ and E Sts. SW.....	36 } 48 }	.....do.....	A-C.....	Aug. 4	O. K.	.....	
1st and East Capitol Sts. to 7th and G Sts. SE.	30	.....do.....	D-F.....	Aug. 11	O. K.	.....	
7th and G Sts. to 17th and C Sts. SE.	30	.....do.....	D.....	Aug. 18	O. K.	.....	
14th St., Pennsylvania Ave. to K St. NW.	24	.....do.....	E.....	Sept. 1	O. K.	.....	
17th St., R St. to Florida Ave. NW.	2-20	First high...	K.....	Sept. 8	O. K.	.....	
17th St., L to R Sts. NW.....	20	.....do.....	K.....	Sept. 15	O. K.	.....	
R St., 11th to 17th Sts. NW....	48	.....do.....	K.....	Sept. 29	O. K.	.....	
17th and R Sts., to 29th and M Sts. NW.	48	.....do.....	L.....	Oct. 6	O. K.	23,000	Joint, 12 by 48 inches cross, 23d and M, 21,200 gal- lons; horse fountain, 1,800 gallons.
29th and M Sts. to Reservoir and Conduit Rd. NW.	48	.....do.....	I.....	Oct. 13	O. K.	.....	
R St., 4th to 11th Sts. NW....	48	.....do.....	L.....	Oct. 27	O. K.	.....	
Florida Ave., Porter to 15th Sts. NE.	12	Second high.	Q.....	Nov. 3	O. K.	111,700	Galludet Col- lege, 1,900 gallons; B. & O. freight sheds, 1-inch drain, 109,800 gallons.
Florida Ave., Porter to 8th Sts. NW. and 8th St., Flor- ida Ave. to Barry Pl. NW.	12	.....do.....	Q.....	Nov. 10	O. K.	18,144	Horse foun- tain, 3,940 gallons; 12- inch joint, 2d and Florida Ave., 14,204 gallons.
Pumping Station to 4th and Channing Sts. NE.....	12 } 36 }	.....do.....	P.....	Dec. 1	O. K.	.....	
4th and Channing Sts. to 10th and Lawrence Sts. NE.	12	.....do.....	P.....	Dec. 8	O. K.	.....	
15th and W Sts. to 22d and P Sts. NW.	20	.....do.....	M.....	Dec. 15	O. K.	2,310	Horse foun- tain.
13th St., Florida Ave. to Park Rd. NW. and Florida Ave., 13th to 15th Sts. NW.	24	.....do.....	O.....	Dec. 22	O. K.	4,600	Manhattan Laundry, metered.
3d and Bryant Sts. to 13th and Florida Ave. NW.	36	.....do.....	O.....	1913. Jan. 5	( <sup>1</sup> )	(?)	No test.
Pumping Station to 15th and Florida Ave. NW.	36	.....do.....	O.....	Jan. 12	( <sup>1</sup> )	(?)	Do.
11th and East Capitol to Min- nesota and Pennsylvania Aves. SE.	16 } 30 }	First high...	H.....	Jan. 8	O. K.	34,300	Split main, Pennsylvania Ave. Bridge.
New Jersey and Massachusetts Aves. to 9th and K Sts. NW.	30	Gravity.....	A.....	Jan. 26	O. K.	.....	
P St., 23d St. to Wisconsin Ave. NW. and Wisconsin Ave., P to Q Sts. NW.	12	First high...	I.....	Feb. 2	O. K.	.....	
19th and Minnesota Ave. to Kenilworth.	20	.....do.....	H.....	Feb. 9	O. K.	.....	
14th and Good Hope Rd. to Nichols Ave. and Milwau- kee Pl. SE.	20	.....do.....	H.....	Feb. 16	O. K.	.....	
4 $\frac{1}{2}$ and Maine Ave. to 14th and B. Sts. SW.	20	Gravity.....	B.....	Feb. 23	O. K.	.....	
K St., New Jersey Ave. NW. to 1st St. NE. and New Jer- sey Ave., K to L Sts. NW.	24	.....do.....	F.....	Mar. 23	O. K.	.....	
K St., 1st St. to 11th St. NE..	24	.....do.....	F.....	Mar. 30	O. K.	.....	
Brightwood Reservoir to 15th and Kenyon Sts. NW.	36	Second high.	O.....	Apr. 6	O. K.	81,525	Under investi- gation.

<sup>1</sup> Not tight.

## A.—Trunk main tests, 1912-13—Continued.

Location.	Size.	Service.	District.	Date.	Shut-off.	Rate per day.	Flow due to—
	<i>Inches.</i>			1913.		<i>Gallons.</i>	
8th and F Sts. to 7th and Massachusetts Ave. NW.....	10	Gravity.....	A.....	Apr. 13	O. K.....	.....	Valve, New Jersey Ave. and L St., 7,000 gallons; under investigation, 12,200 gallons.
New Jersey Ave., Massachusetts Ave. to L St. NW.	W-30	.....do.....	F.....	Apr. 27	O. K.....	19,200	
New Jersey Ave., B St. to Massachusetts Ave. NW.	W-30	.....do.....	F.....	May 11	O. K.....	.....	No test.
New Jersey Ave., B to L Sts. NW.	E-30	.....do.....	F.....	May 25	(1) (7)	(7)	
33d St., M to Volta Sts. NW.	12	First high...	I.....	June 8	O. K.....	.....	Do.
11th and L Sts. to 17th and I Sts. NW.	12	.....do.....	K.....	June 15	O. K.....	.....	
New Jersey Ave. and B St. NW. to 4½ and Maine Ave. SW.	20	Gravity.....	C-F...	June 22	O. K.....	.....	Do.
L St., 18th to 28th Sts. NW...	36	.....do.....	E.....	June 29	(1) (7)	(7)	

<sup>1</sup> Not tight.

## B1.—District A, survey No. 1.

Date of measurement, Oct. 24-30, 1912.

Mean daily supply..... 9,668,800

Minimum night rate..... 6,990,000

Ratio of minimum night rate to mean daily supply.....per cent.. 72

Subdivision survey:

Started, Aug. 21, 1912.

Finished, Jan. 19, 1913.

Cost..... \$5,592.10

Population:

Resident—

Metered..... 4,206

Unmetered..... 15,253

Total..... 19,459

Floating—

Metered..... 26,987

Unmetered..... 15,088

Total..... 42,075

Per capita consumption, computed from resident population..... 497

Buildings:

Dwellings—

Metered..... 160

Unmetered..... 2,618

Hotels and apartments—

Metered..... 98

Unmetered..... 18

Municipal buildings—

Metered..... 12

Unmetered..... 2

Federal buildings—

Metered..... 4

Unmetered..... 11

Factories and warehouses—

Metered..... 21

Unmetered..... 33

Restaurants—

Metered..... 137

Unmetered..... 1



## Buildings—Continued.

Miscellaneous—	
Metered.....	738
Unmetered.....	1, 112
Total—	
Metered.....	1, 170
Unmetered.....	3, 795
	Gallons.
Night flow detected by subdivision, per day.....	3, 874, 700
Due to inside fixtures—	
Metered.....	681, 200
Unmetered.....	916, 800
Due to underground leakage—	
Service pipes.....	768, 800
Joints on mains.....	96, 500
Fire hydrants.....	97, 000
Broken mains.....	69, 000
Valves and open blow-offs.....	14, 300
Total underground leakage.....	1, 045, 400
Due to Federal buildings and fountains.....	744, 200
Due to municipal buildings, fountains, flush basins, and horse fountains.....	127, 800

## B2.—District B, survey No. 3.

Date of measurement, Mar. 26, Apr. 1, 1913.

Mean daily supply..... 2, 606, 000

Minimum night rate..... 1, 848, 600

Ratio of minimum night rate to mean daily supply..... per cent.. 71

Subdivision survey:

Started, Mar. 2, 1913.

Finished, July 1, 1913.

Cost..... \$1, 503. 79

Population:

Resident—

Metered..... 7, 166

Unmetered..... 6, 135

Total..... 13, 301

Floating—

Metered..... 2, 437

Unmetered..... 5, 792

Total..... 8, 229

Per capita consumption, computed from resident population..... 197

Buildings:

Dwellings—

Metered..... 1, 492

Unmetered..... 1, 302

Hotels and apartments—

Metered..... 9

Unmetered..... 3

Municipal buildings—

Metered..... 12

Unmetered..... 0

Federal buildings—

Metered..... 0

Unmetered..... 12

Factories and warehouses—

Metered..... 11

Unmetered..... 8

Restaurants—

Metered..... 17

Unmetered..... 0

## Buildings—Continued.

Miscellaneous—	
Metered.....	125
Unmetered.....	96
Total—	
Metered.....	1,666
Unmetered.....	1,421
	Gallons.
Night flow detected by subdivision, per day.....	2,001,400
Due to inside fixtures—	
Metered.....	139,500
Unmetered.....	279,700
Due to underground leakage (service pipes).....	86,400
Due to Federal buildings and fountains.....	1,453,200
Due to municipal buildings, fountains, flush basins, and horse fountains.....	34,000

## B3.—District C, survey No. 3.

Date of measurement, Apr. 4-10, 1913.	
Mean daily supply.....	3,877,200
Minimum night rate.....	3,233,600
Ratio of minimum night rate to mean daily supply.....	per cent.. 83
Subdivision survey:	
Started, Jan. 26, 1913.	
Finished, June 25, 1913.	
Cost.....	\$1,649.54

## Population:

Resident—	
Metered.....	6,903
Unmetered.....	14,533
Total.....	21,436
Floating—	
Metered.....	3,753
Unmetered.....	525
Total.....	4,278
Per capita consumption, computed from resident population.....	188

## Buildings:

Dwellings—	
Metered.....	1,161
Unmetered.....	3,235
Hotels and apartments—	
Metered.....	11
Unmetered.....	1
Municipal buildings—	
Metered.....	12
Unmetered.....	3
Federal buildings—	
Metered.....	0
Unmetered.....	6
Factories and warehouses—	
Metered.....	13
Unmetered.....	5
Restaurants—	
Metered.....	35
Unmetered.....	2
Miscellaneous—	
Metered.....	276
Unmetered.....	210
Total—	
Metered.....	1,508
Unmetered.....	3,462

	Gallons.
Night flow detected by subdivision.....per day..	1, 547, 250
Due to inside fixtures—	
Metered.....	106, 500
Unmetered.....	634, 750
Due to underground leakage—	
Service pipes.....	209, 100
Joints on mains.....	41, 000
Total underground leakage.....	250, 100
Due to Federal buildings and fountains.....	159, 900
Due to municipal buildings, fountains, flush basins, and horse fountains.....	<sup>1</sup> 311, 700

## B4.—District D, survey No. 2.

Date of measurement, Apr. 4-10, 1913.	
Mean daily supply.....	4, 800, 000
Minimum night rate.....	3, 744, 000
Ratio of minimum night rate to mean daily supply.....per cent..	78
Subdivision survey:	
Started, Apr. 18, 1913.	
Finished, June 15, 1913.	
Cost.....	\$1, 046. 17

Population:	
Resident—	
Metered.....	417
Unmetered.....	11, 778
Total.....	12, 195
Floating—	
Metered.....	3, 150
Unmetered.....	3, 069
Total.....	6, 219
Per capita consumption, computed from resident population.....	393

Buildings:	
Dwellings—	
Metered.....	27
Unmetered.....	2, 767
Hotels and apartments—	
Metered.....	5
Unmetered.....	12
Municipal buildings—	
Metered.....	13
Unmetered.....	3
Federal buildings—	
Metered.....	1
Unmetered.....	3
Factories and warehouses—	
Metered.....	4
Unmetered.....	2
Restaurants—	
Metered.....	23
Unmetered.....	0
Miscellaneous—	
Metered.....	34
Unmetered.....	287
Total—	
Metered.....	107
Unmetered.....	3, 074

<sup>1</sup> 306,000 gallons of this amount was due to inside consumption in the sewage pumping station.

	Gallons.
Night flow detected by subdivision.....per day..	1, 529, 700
Due to inside fixtures—	
Metered.....	22, 860
Unmetered.....	244, 360
Due to underground leakage—	
Service pipes.....	278, 000
Public hydrants.....	13, 000
Total underground leakage.....	291, 000
Due to Federal buildings and fountains.....	902. 400
Due to municipal buildings, fountains, flush basins, and horse fountains.....	23, 100

## B5.—District H, survey No. 2.

Date of measurement, Nov. 23-24, 1912.	
Mean daily supply.....	434, 300
Minimum night rate.....	343, 000
Ratio of minimum night rate to mean daily supply.....per cent..	79
Subdivision survey:	
Started Jan. 19, 1913.	
Finished Feb. 21, 1913.	
Cost.....	\$719. 35
Population:	
Resident—	
Metered.....	122
Unmetered.....	2, 276
Total.....	1 2, 398
Floating—	
Metered.....	665
Unmetered.....	376
Total.....	1, 041
Per capita consumption, computed from resident population.....	181
Buildings:	
Dwellings—	
Metered.....	7
Unmetered.....	546
Hotels and apartments—	
Metered.....	1
Unmetered.....	0
Municipal buildings—	
Metered.....	2
Unmetered.....	5
Federal buildings—	
Metered.....	1
Unmetered.....	0
Factories and warehouses—	
Metered.....	1
Unmetered.....	0
Miscellaneous—	
Metered.....	7
Unmetered.....	9
Total—	
Metered.....	40
Unmetered.....	539

<sup>1</sup> The population of the Government Hospital for the Insane is not carried on this statement as the institution does not use District water except in cases of emergency.

	Gallons.
Night flow detected by subdivision, per day.....	254, 800
Due to inside fixtures—	
Metered.....	43, 000
Unmetered.....	156, 100
Due to underground leakage—	
Service pipes.....	18, 200
Broken mains.....	34, 300
Total underground leakage.....	52, 500
Due to municipal buildings, fountains, flush basins, and horse fountains.	1, 200

B6.—District I, survey No. 2.

Date of measurement, June 28—Apr. 5, 1912.	
Mean daily supply.....	3, 846, 000
Minimum night rate.....	3, 168, 000
Ratio of minimum night rate to mean daily supply.....	per cent. 82
Subdivision survey:	
Started Aug. 1, 1912.	
Finished Nov. 24, 1912.	
Cost.....	\$2, 086. 05

Population:	
Resident—	
Metered.....	11, 389
Unmetered.....	6, 986
Total.....	18, 375
Floating—	
Metered.....	4, 658
Unmetered.....	809
Total.....	5, 467
Per capita consumption, computed from resident population.....	209

Buildings:	
Dwellings—	
Metered.....	1, 668
Unmetered.....	2, 146
Hotels and apartments—	
Metered.....	81
Unmetered.....	1
Municipal buildings—	
Metered.....	10
Unmetered.....	1
Federal buildings—	
Metered.....	0
Unmetered.....	1
Factories and warehouses—	
Metered.....	2
Unmetered.....	1
Restaurants—	
Metered.....	15
Unmetered.....	1
Miscellaneous—	
Metered.....	230
Unmetered.....	175
Total—	
Metered.....	2, 002
Unmetered.....	2, 326

	Gallons.
Night flow detected by subdivision, per day.....	935, 138
Due to inside fixtures—	
Metered.....	145, 950
Unmetered.....	503, 450
Due to underground leakage—	
Service pipes.....	73, 150
Joints on mains.....	102, 200
Total underground leakage.....	175, 350
Due to Federal buildings and fountains.....	6, 000
Due to municipal buildings, fountains, flush basins, and horse fountains.....	2, 800

## B7.—District K, survey No. 2.

Date of measurement, Mar. 28-Apr. 5, 1912.	
Mean daily supply .....	3, 602, 000
Minimum night rate .....	2, 592, 000
Ratio of minimum night rate to mean daily supply..... per cent..	72
Subdivision survey:	
Started June 4, 1912.	
Finished Aug. 17, 1912.	
Cost.....	\$3, 363. 83
Population:	
Resident—	
Metered.....	6, 015
Unmetered.....	14, 979
Total.....	20, 994
Floating—	
Metered.....	2, 301
Unmetered.....	1, 803
Total.....	4, 104
Per capita consumption, computed from resident population.....	172
Buildings:	
Dwellings—	
Metered.....	285
Unmetered.....	3, 426
Hotels and apartments—	
Metered.....	98
Unmetered.....	4
Municipal buildings—	
Metered.....	9
Unmetered.....	2
Federal buildings—	
Metered.....	0
Unmetered.....	0
Factories and warehouses—	
Metered.....	4
Unmetered.....	1
Restaurants—	
Metered.....	10
Unmetered.....	0
Miscellaneous—	
Metered.....	129
Unmetered.....	551
Total—	
Metered.....	535
Unmetered.....	3, 984

	Gallons.
Night flow detected by subdivision, per day.....	1,736,800
Due to inside fixtures—	
Metered.....	315,400
Unmetered.....	626,000
Due to underground leakage—	
Service pipes.....	400,200
Joints on mains.....	139,500
Total underground leakage.....	539,700
Due to Federal buildings and fountains.....	24,000
Due to municipal buildings, fountains, flush basins, and horse fountains.....	35,000

B8.—District L, survey No. 2.

Date of measurement, Mar. 15–21, 1912.	
Mean daily supply.....	7,344,000
Minimum night rate.....	4,392,000
Ratio of minimum night rate to mean daily supply..... per cent..	59
Subdivision survey:	
Started Dec. 21, 1912.	
Finished Apr. 15, 1913.	
Cost.....	\$3,145.06

Population:	
Resident—	
Metered.....	22,001
Unmetered.....	13,211
Total.....	35,212
Floating—	
Metered.....	11,467
Unmetered.....	695
Total.....	12,162
Per capita consumption, computed from resident population.....	209

Buildings:	
Dwellings—	
Metered.....	4,340
Unmetered.....	2,896
Hotels and apartments—	
Metered.....	64
Unmetered.....	15
Municipal buildings—	
Metered.....	22
Unmetered.....	2
Federal buildings—	
Metered.....	1
Unmetered.....	0
Factories and warehouses—	
Metered.....	8
Unmetered.....	4
Restaurants—	
Metered.....	32
Unmetered.....	0
Miscellaneous—	
Metered.....	554
Unmetered.....	344
Total—	
Metered.....	5,021
Unmetered.....	3,261

	Gallons.
Night flow detected by subdivision, per day.....	3, 886, 000
Due to inside fixtures—	
Metered.....	2, 939, 800
Unmetered.....	247, 700
Due to underground leakage—	
Service pipes.....	494, 400
Joints on mains.....	55, 000
Total underground leakage.....	549, 400
Due to Federal buildings and fountains.....	0
Due to municipal buildings, flush basins, and horse fountains.....	29, 800

## C.—Results, pitometer division, 1912-13.

	Number.	Waste per day.
		Gallons.
Service pipes inspected (metered, 15,390).....	48, 437	
Houses inspected.....	26, 397	
Houses with defective fixtures (14.1 per cent).....	3, 725	
Abandoned services and taps.....	15	180, 900
Iron services broken.....	311	1, 988, 840
Lead services broken.....	59	394, 000
Wiped joints broken.....	64	282, 300
Couplings leaking.....	31	75, 600
Curb stopcocks leaking.....	32	32, 920
Street washers leaking.....	8	5, 700
Joints on mains leaking.....	104	962, 310
Mains broken.....	3	103, 300
Valves leaking.....	12	13, 200
Public hydrants leaking.....	3	21, 000
Fire hydrants leaking.....	3	115, 000
Blow-offs partly open.....	1	6, 000
Unclassified.....	5	15, 000
Waste found and prevented.....		4, 196, 070
Notices served.....	483	
Houses cut off.....	57	

## Expenses, pitometer division.

Operating expenses, per diem labor and material.....	\$34, 338. 55
New work, per diem labor and material.....	3, 349. 65
Total expenses.....	37, 688. 20

## D.—Miscellaneous night tests, 1912-13.

Population:	
Resident—	
Metered.....	689
Unmetered.....	27
Total.....	716
Floating—	
Metered.....	300
Unmetered.....	227
Total.....	527
Buildings:	
Dwellings—	
Metered.....	139
Unmetered.....	15
Municipal buildings—	
Metered.....	1
Unmetered.....	0

<sup>1</sup> 1,933,800 gallons of this amount was due to the use of water by the Washington Terminal Co.



Buildings—Continued.

Federal buildings—

Metered..... 1  
Unmetered..... 1

Miscellaneous—

Metered..... 5  
Unmetered..... 1

Total—

Metered..... 146  
Unmetered..... 17

Gallons.

Night flow detected by subdivision, per day..... 172, 880

Due to inside fixtures—

Metered..... 6, 880  
Unmetered..... <sup>1</sup> 112, 190

Due to underground leakage (joints on mains)..... 14, 204

Due to Federal buildings and fountains..... 27, 700

Due to municipal buildings, flush basins, and horse fountains..... 10, 450

E.—Measurements of permanent districts, 1912–13.

District.	Date.	Mean daily supply per day.	Night rate per day.	Ratio.
		<i>Gallons.</i>	<i>Gallons.</i>	<i>Per cent.</i>
A.....	Oct. 24–30, 1912....	9, 668, 800	6, 990, 000	72
B.....	Mar. 26–Apr. 1, 1913	2, 606, 000	1, 848, 600	71
C.....	Apr. 4–10, 1913....	3, 877, 200	3, 233, 600	83
D.....	Sept. 12–18, 1912....	4, 608, 000	4, 140, 000	89
	Apr. 4–10, 1913....	4, 800, 000	3, 744, 000	78
E.....	Aug. 21–27, 1912....	7, 747, 200	6, 235, 000	80
F.....	Apr. 18–24, 1913....	6, 075, 000	5, 035, 000	83
G.....	Sept. 21–27, 1912....	4, 180, 800	3, 320, 000	79
H.....	July 8–15, 1912....	5, 256, 000	3, 696, 000	70
I.....	June 5–11, 1913....	4, 416, 000	3, 384, 000	77
J.....	Nov. 23–24, 1912....	434, 300	343, 000	79
K.....	May 8–14, 1913....	3, 975, 400	3, 161, 100	80
L.....	do.....	3, 896, 600	2, 454, 900	63
	June 5–11, 1913....	6, 312, 000	2, 880, 000	46

DIVISION G.—Tests and experiments.

The work of this division is under the direction of H. D. Yates, from whose report the following is taken:

This division is charged with testing and correcting the measuring apparatus used by the department; with making accuracy tests of all water meters to be used in the District of Columbia; with purifying the oil removed by the waste-cleaning machine; with making special tests of boilers and machinery as called for; with figuring the daily pumpage, consumption, station duty, etc., and with keeping necessary records.

A brief summary of the tests made during the year is as follows: Water meters,  $\frac{1}{8}$  to 6 inch sizes, tests for accuracy, 15,364; valves,  $\frac{1}{4}$  to 30 inch sizes, tests for leaks, 1,016; corporation cocks,  $\frac{1}{4}$  to 1 $\frac{1}{2}$  inch sizes, tests for leaks, 3,226; curb cocks,  $\frac{1}{4}$ -inch size, tests for leaks, 3,057; stopcocks,  $\frac{1}{4}$ -inch size, tests for leaks, 4,636; Venturi meter recorders tested, 4; and pressure gauges tested and corrected, 95. Also made "loss of head" and durability tests of small-sized water meters; acid tests of grease, comparative tests of gasoline; evaporation tests of boilers Nos. 5 and 6; duty trials of pumping engines Nos. 2, 4, 5, 6, and 7, and overhauled the pitometer pump-slip indicators, CO<sub>2</sub> recorder and other testing and measuring apparatus installed in the pumping station.

Accuracy tests of the 10,000  $\frac{1}{2}$ -inch Hersey water meters furnished under contract during the year were finished March 31, three days after the last shipment of 375 meters was received.

During the year there were 807 gallons of oil removed from the material passed by the waste-cleaning machine and rendered fit for use in oil cups.

All of the coal burned at the pumping station during the year is known commercially as Jenner bituminous coal, and eighteen 300-ton lots were purchased on the "ash,

<sup>1</sup>109,790 gallons of this was due to an open fire line in the Baltimore & Ohio freight yards.

moisture, heat unit" basis. Samples were collected from each delivery and forwarded to the Bureau of Mines, where all tests were made. The analyses averaged 2.5 per cent moisture "as received" and 17.58 per cent volatile matter, 72.12 per cent fixed carbon, 1.59 per cent sulphur, 10.3 per cent ash, and 13,983 British thermal units per pound, on the "dry coal" basis.

The total pumpage for the year was 9,367,279,700 gallons, which is 740,507,300 gallons less than 1911-12. The cost of operation, supplies, and net repairs, including the installation of new mechanical stokers, was \$48,949.38, making the total operative cost of pumping 1,000,000 gallons of water into the mains \$5.23. This cost is approximately 35 per cent more than in 1911-12 and is mainly due to the increased cost of repairs, which includes the cost of the new mechanical stokers, and partly to a diminished station duty.

The station duty for the year was 71,872,733 foot-pounds per 100 pounds of coal. This is 14.01 per cent less than the duty obtained during the preceding year and represents an annual loss of 768.9 gross tons of coal. A part of this loss is due to the increased use of steam jets for the purpose of smoke prevention, and a part is attributed to the new mechanical stokers. The average monthly duty obtained since the new stokers were put in service in November last, was 69.3 millions of foot-pounds; highest was 75 in July, and lowest was 66 in February and March.

The accompanying tabular statements show the sizes and makes of all private and municipal water meters tested during the year, the pumping record for the year, and the operative cost of pumping.

The normal force employed consisted of 1 skilled laborer, 1 draftsman, 1 plumber, and 1 laborer.

*Cost of operating pumping engines at the District pumping station during the year ending June 30, 1913.*

Operating expenses:

Salaries—

1 chief steam engineer, one-half annual salary.....	\$875.00	
3 steam engineers.....	3,300.00	
3 assistant steam engineers.....	2,625.00	
3 firemen.....	2,590.97	
4 oilers.....	2,440.00	
3 cleaners.....	1,916.25	
1 substitute fireman.....	414.41	
2 boiler cleaners.....	1,043.92	
1 electrician and helpers, part of salary.....	978.12	
5 laborers (2 cleaning engine-room floor, 2 cleaning windows, galleries, etc., and 1 handling coal)....	2,667.50	
		\$18,851.17

Coal—

585,297 pounds bituminous coal, at \$3.17 per ton in bins.....	823.30	
11,707,185 pounds bituminous coal at \$3.27 per ton (corrected for deductions on account of British thermal units and excess ash).....	16,631.95	

Cost of coal chargeable to plant..... 17,455.25

Supplies—Cylinder oil, engine oil, crank case oil, grease, waste, packing, washers, lard oil, and graphite..... 2,657.90

Repairs to pumps, engines, boilers, including grates—

Per diem labor.....	\$2,707.85	
Material expended.....	7,277.22	
		9,985.07

Total cost of operation..... 48,949.39

Total pumpage for the year, without allowance for slip..... gallons.. 9,367,279,700

Greatest amount pumped in 1 day (June 16)..... do... 29,847,100

Least amount pumped in 1 day (Dec. 22)..... do... 21,009,800

Average per day..... do... 25,663,800

Average dynamic head against pumps, in feet..... 113.09

Duty =  $\frac{\text{Gallons pumped} \times 8.34 \times 100 \times \text{dynamic head}}{\text{Total fuel consumed}}$  = 71,872,733

Cost of fuel, pumping 1,000,000 gallons 1 foot high..... \$0.0165

Total operative cost of pumping 1,000,000 gallons 1 foot high..... 0.0462

Total operative cost per 1,000 gallons pumped..... 0.00523

NOTE.—The above items of supplies and repairs were furnished by the clerical division. The large increase in the cost of operation is mostly due to the fact that there has been included the cost of the Crowe chain grate stokers in the item of "Repairs to boilers, etc." The pumpage is figured from plunger displacement, without allowance for slip. The aggregate slip of all pumps during the year, based on pitometer determinations, is 3.76 per cent of the total displacement. The average dynamic head is figured from the total work done by pumping engines and generators. The fuel consumed is the total coal burned excluding the heating system. The cost of heating—372,575 pounds of coal—was \$528.86.

Tests of private and municipal water meters (excluding meters on endurance test) during the fiscal year ending June 30, 1913.

Meter.	Size.									Total.
	1- inch.	1½- inch.	1- inch.	1½- inch.	1½- inch.	2- inch.	3- inch.	4- inch.	6- inch.	
American.....	10	2	3							15
Crown.....	5	17	37		20	8	4	2		93
Empire.....			1		2	5	1	2		11
Enarc.....		4			8					12
Gem.....						2	2			4
Hersey.....	12,521	418	11		18	10	5	2		12,985
Hersey detector.....							1			1
Keystone.....	107	2	1		4		3	2		119
King.....	7				2					9
Lambert.....	636	69	25		27	14	5	6		782
Nash.....	18	209	129		58	48	11	3		476
Niagara.....	3	26	21	3	18	14				85
Pittsburgh disk.....	2	7	9		4	4	4			30
Thomson.....	1	18	28		17	11		2		77
Trident.....	348	22	27		8	4	12	19		440
Union.....		3	9		2	3		1	1	19
Worthington.....	51	25	12		15	8	2			113
Total.....	13,709	822	313	3	203	131	50	39	1	15,271

#### DIVISION H.—Pumping station and shops.

This division has charge of all pumping incident to the operation of the distribution system, care of pumping station and machinery, and all miscellaneous repair work needed in the department. It is under the direction of James T. Fink, chief steam engineer, from whose report the following is taken:

Water pumped figured from plunger displacement:	
First high service.....	gallons.. 6,576,877,440
Second high service.....	do... 2,149,625,350
Third high service.....	do... 640,433,700
Total.....	do... 9,366,936,490
Coal burned.....	tons.. 5,651.19
Cylinder oil used.....	gallons.. 453.68
Engine oil used.....	do... 1,007.37
Grease used.....	pounds.. 374
Waste used.....	do... 963

The regular force employed for the operation of the pumping engines, boilers, and auxiliaries, cleaning of machinery, etc., is as follows:

Steam engineers.....	4
Assistant steam engineers.....	3
Firemen.....	3
Oilers.....	4
Cleaners.....	4
Laborers (no laborers employed on Sunday).....	5

For the fourth high service the water is pumped from the Reno Reservoir, (which is supplied by the third high-service pumps) to an elevated tank by gasoline engines and triplex pumps. This machinery is operated daily by the watchman in charge of the reservoir and one assistant on night duty. The water pumped for this service during the year amounts to 53,866,478 gallons.

Under the head of shop work are included the following divisions and the number of men ordinarily employed to carry on the work:

Machinists.....	9
Blacksmiths.....	2
Carpenters.....	7
Painters.....	4
Steam fitter.....	1
Brass molder.....	1
Laborers.....	12

NOTE.—None of the above employees work on Sunday.

The work accomplished during the year is as follows: All necessary repairs for the machinery at this station and the fourth high-service station, automobile trucks, etc.; made practically all repair parts for fire plugs, valves, street hydrants, etc., including all tools used on the work of laying water mains, making connections to mains, etc., such as picks, chisels, breakers, calking tools, yarning irons, valve keys, wrenches, pipe bands, eyebolts, arch irons, and miscellaneous tools and appliances as required for the various work; erected machinery at Anacostia station (this work is almost completed and engines ready to run); tearing out Roney mechanical stokers and erected and made repairs to Crowe stokers; erected and made connections for Kerr steam turbine; cut down brick wall and erected fence around south property yard at station; built two shops in rear of station; erected fence at Piney Branch Bridge; fitted up coupling, shafting, and motor for fountain at Union Station Plaza; removed gasoline pump and tank in west property yard and installed new; replaced valves in No. 7 pump; made orifices, connections, and recorders; set lathe and doing instrument work for pitometer division; made five diaphragm pump trucks; made metal patterns for letter plates on valves, lamp posts and meter frame and cover; made foundation bolts for cranes and machinery at Bryant Street and Anacostia stations; built 48-inch pipe cutter; machined samples of iron castings; built eighty-one 3-way and ninety 4-way valves, 6 and 8 inch bells, two hundred 8-inch and one hundred 6-inch 2-way gate valves; repaired valve as follows: Eleven 3-inch, eighty-four 4-inch, sixty-nine 6-inch, twenty-nine 8-inch, thirteen 12-inch, fourteen 3-way, seventeen 4-way, and one 24-inch Eddy, total 234 valves. Repaired 29 McClelland standpipes, made 26 side-valve handles for McClelland fire plugs, made 179 valves for Smith fire plugs, fitted up 29 McClelland fire-plug casings, tested 2 of each shipment of valves for interchangeability, drilled and tapped 76 pipe bonnets, bored out 25 street-hydrant knobs, made 968 air valves for fire plugs, made 225 springs for valves, machined 77 waste valves for Glamorgan fire plugs, made 50 collars for Haig waste-valve rods, made 25 nipple caps for fire plugs, made 84 brass operating screws for valves of various sizes, bored and tapped one hundred 4-inch plugs for blow-off connections, made 50 nipples and caps for divide valves, drilled 15 seat rings for fire-plugs, cut pipe and 5,000 pipe nipples, sizes  $\frac{1}{4}$  to 2 inches, made 25 slip washers and special nuts for tapping machine, made 50 sets of cement briquet molds, made 190 handles for pipe cutters, put 200 handles in dirt rammers, reamed out fifty  $\frac{3}{4}$ -inch unions for meter division, repaired 37 Buckeye burners, repaired and sharpened Smith cutters, connecting steam piping and radiators shops in rear of station, sharpened paper-cutter knives, repaired 1,233 water meters.

During this year all composition metal castings for valve work, repair parts, etc., have been made in our foundry, which has been operated without interruption, expediting the work in the machine shop, by having castings ready when needed, and in such quantities as to be worked economically.

The blacksmiths have made 49 curb and extension keys; made 346 new chisels; made 118 calking sets, 199 meter-box keys; made and sharpened 193 drills; made and sharpened 162 stakes; sharpened 9,550 chisels and 14,155 picks, and welded 478 new ends on picks; repaired 259 curb and extension keys; made and repaired 61 frost pins, 48 fire paddles, 80 casing hooks; made irons for tool wagons, pipe bands, hook rods and plates, tongs, angle irons, drift pins, wrenches, tappets for fire plugs, yarning irons, swedges; repaired lawn mowers, tunneling bars; sharpened mattocks; and made repairs to wagons and automobiles.

The carpenters have built shops in rear of station, varnishing room in west yard, shed at Anacostia station, office room for storekeeper, tool wagons, flume at Brightwood Reservoir, scaffolding and bridge at Thirty-first and R Streets NE., wall around property yard, body for automobile; set 15-ton scale and repairs to 5-ton scale; built watch boxes; repaired 2 boats and watch boxes; made map cases, drawing boards, derrick, cardcases, bookcase, desk, window screens, battery boxes, flask boards, forms for concrete work, cement floors in shops and varnishing room, gauge board; made and set concrete benches in greenhouse; boxed patterns for shipment; repairs to bridge at Langdon, arranging desks in assessor's office; framed charts, building and

tagging bins in storeroom; filed saws; made and repaired patterns for parts of valves, meter frame, lamp-post, valve-operating machine, 48-inch pipe cutter, water turbine; repairs to tool wagons, wagons for stable, and automobiles.

The painters have painted pitometer boxes, tool house, and gatehouse at Reno, lodge at Brightwood, tool boxes, water softener, wagons, automobiles, platforms, and walk at Sixteenth Street Bridge, frame of No. 7 engine, fence, horse fountains, derrick, railing in engine room, window boxes, water coolers, 15-ton scale, watch boxes, woodwork in shops, transit rods, pit and house at Union Station; filled and varnished instrument boxes, cabinets, desks, battery boxes, buggies, automobiles and wagons, tables, etc.; replaced window glass; covered steam piping with asbestos; lettered oil-cans, assignment board, sign boards, number boards, valve casings, map holders; made and repaired curtains and cushions for wagons, automobiles, and buggies.

The electrician and helpers have taken care of generators, switchboards, motors, lights, etc.; operated conveyor, economizer scrapers, and crane; tested and charged batteries; put ventilators in trapdoors and put in copper gutter at Brightwood lodge and gatehouses; repaired electric fans; transferred coal; repaired wiring and batteries in automobiles; set pump and wired motor for fountains at Union Station Plaza; oiled and repaired elevators, soldered gutters in roof at station, laying conduit, putting up conduit, and lights in shops in rear of station; installed conduits and electric fixtures at Anacostia station; inspected steelwork on tanks at Anacostia; laid out lines and installed motor in pitometer workshop; connected feeds for turbine generator; laid conduits and installed lights in Venturi meter pit.

The janitor and his force have taken care of all cleaning throughout the building, removed shavings from the woodworking shop, turnings, scraps, and other debris from the machine shop, attended to the window cleaning, water coolers, messenger service to the office, etc.

\* \* \* \* \*

Once more I wish to extend my thanks to the employees of the department, and especially to the heads of the various divisions and subdivisions for the excellent work accomplished.

Very respectfully, your obedient servant,

W. A. McFARLAND,  
*Superintendent Water Department.*

Lieut. Col. CHESTER HARDING,  
*Corps of Engineers, United States Army,  
Engineer Commissioner, District of Columbia.*

TABLE I.—*Statement of cash account of the water fund, District of Columbia, for the fiscal year ended June 30, 1913, as shown by the books of the auditor of the District of Columbia.*

Balances July 1, 1912:		
In Treasury of the United States .....	\$99,396.22	
In hands of the disbursing officer, District of Columbia ..	10,205.22	
In hands of collector of taxes, District of Columbia .....	628.62	
		\$110,230.06
Receipts:		
Water rents .....	640,008.64	
Taps and stopcocks .....	8,685.50	
Water-main taxes, principal .....	134,491.81	
Interest on same .....	4,201.94	
Sale of old material .....	3,131.01	
Damages to property .....	22.80	
		790,541.70
Repayments:		
Cash—Salaries, distribution branch, 1913 .....	65.73	
Salaries, revenue and inspection branch, 1913 ..	4.44	
High service, 1913 .....	2,827.16	
High service, 1912 .....	88.00	
Transfer vouchers—Salaries, distribution branch, 1913 ..	107.44	
High service, 1913 .....	11,766.90	
Salaries, distribution branch, 1912 ..	64.24	
		14,923.91
		<u>915,695.67</u>

## Expenditures:

## Appropriation, 1913—

Salaries, revenue and inspection branch.....	\$31, 100. 00
Salaries, distribution branch.....	51, 653. 13
Contingent expenses.....	2, 917. 34
General expenses.....	31, 486. 93
High service.....	713, 077. 07
Refunds.....	1, 965. 82

Reimbursement of the United States,  
account appropriation for the extension of water mains..... \$20, 000. 00

Less credit for amount of collections account of assessments under same, covered in to the credit of the United States during fiscal years 1911 and 1912..... 2, 881. 59

17, 118. 41

\$849, 318. 70

## Appropriation, 1912—

Contingent expenses.....	458. 42
General expenses.....	4, 700. 26

5, 158. 68

## Balances June 30, 1913:

In Treasury of the United States.....	54, 033. 08
In hands of disbursing officer, District of Columbia.....	7, 000. 00
In hands of collector of taxes, District of Columbia.....	185. 21

61, 218. 29

915, 695. 67

TABLE II.—Statement of the operating expenses of the water department for the year ended June 30, 1913.

Heads of expenditure.	Salaries and per diem labor.	Material expended, cuts to pavements, transportation, and items charged direct.	Total expenditures.
Superintendence and engineering.....	\$23, 234. 71	\$4, 999. 71	\$28, 234. 42
Care of property, pump house and grounds.....	24, 133. 11	4, 244. 33	28, 377. 44
Maintenance and repair of fire hydrants, public hydrants, fountains, and valves.....	20, 350. 14	11, 035. 14	31, 385. 28
Maintenance and repair of reservoirs.....	4, 305. 11	1, 483. 35	5, 788. 46
Public hydrants and fountains installed.....	177. 06	203. 96	381. 02
Water mains laid.....	62, 561. 91	149, 917. 57	212, 479. 48
Leak service.....	13, 685. 66	6, 257. 68	19, 943. 34
Water department telephone system and rentals.....	3, 971. 38	640. 65	4, 612. 03
Water department stables.....	31, 626. 35	11, 787. 60	43, 413. 95
Inspection of pipe and fittings at foundry.....	2, 925. 45	78. 09	3, 003. 54
Office of the water registrar, District of Columbia.....	49, 193. 44	1, 745. 81	50, 939. 25
Installation of water meters, and maintenance and repairs thereof.....	25, 998. 19	96, 670. 50	122, 668. 69
Repair, extension, and inspection of service pipes.....	36, 209. 67	5, 892. 75	42, 102. 42
Tapping water mains.....	4, 763. 21	4, 006. 90	8, 770. 11
Office of the superintendent (clerical force).....	12, 267. 19	1, 113. 51	14, 380. 70
Pitometer division (detection of leaks).....	28, 816. 35	8, 871. 85	37, 688. 20
Tests and experiments.....	5, 876. 56	652. 06	6, 528. 62
Shopwork.....	15, 126. 61	7, 498. 64	22, 625. 25
Operating pumping engines, Bryant Street station.....	21, 559. 02	27, 879. 84	49, 438. 86
Pumping equipment, purchased and paid for.....	1, 326. 36	36, 134. 32	37, 460. 68
Deposit work (repaid to the department).....	6, 334. 74	8, 100. 23	14, 434. 97
Office of the Engineer Commissioner, District of Columbia.....	3, 593. 50	1, 054. 78	4, 648. 28
Office of the assessor, District of Columbia.....	2, 220. 18	173. 82	2, 394. 00
Office of the purchasing officer, District of Columbia.....	111. 10	111. 10	222. 20
New buildings and extensions.....	16, 382. 21	36, 889. 23	53, 271. 44
Replacement of fire hydrants, public hydrants, fountains, lowering water mains, etc.....	18, 511. 84	23, 969. 44	42, 481. 28
Miscellaneous office expenses, postage, and car tickets.....	.....	982. 50	982. 50
Miscellaneous expenditures for freight charges, advertising, telegrams, hauling, etc.....	18. 44	3, 242. 77	3, 261. 21
Total expenditures.....	436, 168. 39	455, 638. 13	891, 806. 52
Less credit for transportation furnished by department stables.....	31, 626. 35	11, 787. 60	43, 413. 95
Net expenditures.....	404, 542. 04	443, 850. 53	848, 392. 57

TABLE II.—Statement of the operating expenses of the water department for the year ended June 30, 1913—Continued.

	Per cent.	Amount.
Charged to general account, viz:		
New work.....	58.9	\$492,840.34
Operating expenses.....	25.4	215,991.08
General repairs.....	10.6	91,108.81
Replacement of old work.....	5.1	48,452.54
Total.....	100.0	848,392.57

TABLE III.—Statement of the distribution system, including mains laid by the United States, the District of Columbia, and on account of repayment work.

	In service June 30, 1912.	Laid during year ended June 30, 1913.	Abandoned during year ended June 30, 1913.	In service June 30, 1913.
75-inch diameter.....linear feet..	600			600
48-inch diameter.....do.....	44,219		47	44,172
42-inch diameter.....do.....	23			23
36-inch diameter.....do.....	58,832	1,430	1,211	59,051
30-inch diameter.....do.....	53,225	9	7	53,227
24-inch diameter.....do.....	21,671	25	30	21,666
20-inch diameter.....do.....	95,404	1,893	262	97,035
16-inch diameter.....do.....	14,074	2,145		16,219
12-inch diameter.....do.....	324,580	27,564	1,602	350,542
10-inch diameter.....do.....	9,037	77	4	9,110
Total trunk mains.....	621,665	33,143	3,163	651,645
8-inch diameter.....linear feet..	581,636	95,469	1,394	675,711
6-inch diameter.....do.....	1,473,669	4,716	4,272	1,474,113
4-inch diameter.....do.....	149,321	4,319	1,891	151,749
3-inch diameter.....do.....	78,383	859	463	78,779
Grand total.....	2,904,674	138,506	11,183	3,031,997
Stop valves.....	8,069	860	311	8,618
Fire hydrants.....	3,061	213	108	3,166
Public hydrants.....	215	3	14	204
Public sanitary fountains.....	9	2		11
Public horse fountains.....	147	1		148
Public wells.....	58		4	54

TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913.

Location.	Size.	Length.	Labor.	Material.	Total.
	<i>Inches.</i>	<i>Feet.</i>			
Rear of Anacostia pumping station.....	3	291.09	\$140.25	\$166.99	\$307.24
	4	4.80			
	20	2.14			
Alley, square 284.....	4	447.03	131.18	445.78	576.96
Niagara St. N.W., between Jefferson and 31st Sts.	4	299.33	133.13	204.41	337.54
Alley, square 1001.....	4	165.75	84.43	245.66	330.09
Alley, square 2673.....	4	213.15	77.68	201.97	279.65
Alley, square 288.....	4	313.15	85.56	310.86	396.42
Alley, square 859.....	4	239.20	63.81	186.68	250.49
Alley, square 2672.....	4	173.06	76.88	181.69	258.57
Alley, square 186.....	4	208.70	70.63	210.81	281.44
Alley, square 157.....	4	174.77	78.25	258.82	337.07
Alley, square 4069.....	4	241.50	127.62	268.39	396.01
Alley, square 3040.....	4	43.32	20.50	21.81	42.31
35th St. N.W., between M and Prospect Sts.	4	25.45	27.57	16.28	43.85
Alley, square 199.....	4	154.85	56.18	151.20	207.38
Alley, square 247.....	4	100.03	39.50	95.30	134.80
Alley, square 533.....	4	269.55	75.44	175.70	251.14
Alley, square 511.....	4	197.05	58.13	177.96	236.09
Alley, square 2893.....	4	172.22	55.44	71.71	127.15
N St. N.W., between 20th St. and New Hampshire Ave.....	6	226.56	163.95	329.95	493.90

TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	<i>Inches.</i>	<i>Feet.</i>			
Florida Ave. NW., west from 14th St.....	6	190.97	\$117.44	\$153.17	\$270.61
Alley, square 96.....	6	126.20	60.37	150.10	210.47
Intersection of 6th and M Sts. SW.....	6	246.95	144.05	284.03	428.08
O St. SW., between South Capitol and ½ Sts....	8	4.35			
R St. SE., west from 22d St.....	8	407.78	141.19	262.11	403.30
25th St. SE., between R St. and Naylor Road.	8	100.00	27.19	161.08	188.27
	8	341.20	99.61	266.72	366.33
K St. NW., between 12th and 13th Sts.; K St.	3	3.35			
NW., between 14th St. and Connecticut Ave.	4	28.53			
	6	121.20	2,150.18	3,428.14	5,578.32
Irving St. NE., between 13th and 16th Sts....	8	2,833.72			
30th St. SE., between Pennsylvania Ave. and	8	1,888.85	578.19	1,578.76	2,156.95
R St.....	8	520.70	253.64	446.22	699.86
Cathedral Ave. NW., east and west from 32d					
St.; Hawthorne St. NW., east from 32d St.;					
Garfield St. NW., east from 32d St.; Cleve-					
land Ave., from 32d St. and 32d St. to 31st					
St.; Woodland Drive NW., from 32d St. to					
Garfield St. and 31st Place to Rock Creek	4	9.95			
Drive; 32d St. NW., Woodland Drive to	6	51.05			
Normanstone Drive; 31st St. NW., Wood-	12	11,396.62	2,803.79	7,213.76	10,017.55
land Drive to Cleveland Ave.; 31st Place		3.75			
NW., Woodland Drive to Cleveland Ave.;					
30th St. NW., Massachusetts Ave. to Edgevale					
Terrace; Fulton St. NW., Massachusetts					
Ave. to Normanstone Drive; Massachusetts					
Ave. NW., Rock Creek Drive to 30th St.					
Dennison St. NW., between De Russey St.					
and Howard Road.....	8	826.36	227.49	658.74	886.23
Belt Road NW., between Fessenden and Gar-					
risson Sts.....	8	564.03	250.38	316.83	567.21
Foot St. NE., east from Minnesota Ave.....	8	401.40	125.43	367.54	492.97
	6	4.44			
Florida Ave. NW., west from Cleveland Ave..	8	105.36	77.88	103.34	181.22
	6	7.05			
N St. NW., between 10th and 11th Sts.....	8	260.80	125.37	375.68	501.05
Lanier Place NW., between Ontario and					
Quarry Roads.....	8	124.68	81.67	170.00	251.67
Ingomar St. NW., between 39th and 41st Sts..	8	721.59	194.31	612.27	752.58
Webster St. NW., east from 16th St. 16th St.					
NW., between Webster and Upshur Sts.....	8	1,135.80	312.38	862.59	1,174.97
Warder St. NW., between Columbia Road and					
Irving St.....	8	306.09	161.81	227.10	388.91
S St. NW., east from 36th St.....	8	120.48	56.06	127.68	183.74
Summit Place NW., south from Quarry Road.	6	20.95			
	8	99.40	73.68	219.36	293.04
Madison St. NW., between 14th and 16th Sts..	8	750.47	268.93	626.47	895.40
Belt Road NW., between Ellicott and Fessen-					
den Sts.; Fessenden St. NW., east from Belt					
Road.....	8	635.71	210.51	480.34	690.85
Davenport St. NW., between De Russey and					
Howard Sts.....	8	881.39	330.18	649.27	979.45
15th St. NW., between Webster and Allison					
Sts.....	8	436.72	120.12	373.75	493.87
5th St. NW., between Harvard St. and					
Gresham Place; Gresham Place NW., west					
from 5th St.....	8	455.02	207.68	407.85	615.53
Lawrence St. NE., west from 15th St.....	8	251.97	170.31	170.90	341.21
Macomb St. NW., west from 35th St.; 35th St.					
NW., south from Macomb St.....	8	679.27	205.56	410.67	616.23
U St. and Florida Ave. NW., east from 18th	4	6.50			
St.; 18th St. NW., between U and California	6	93.37	355.79	834.40	1,190.19
Sts.....	8	514.80			
Aspen St. NW., between 5th and 6th Sts.;	8	498.06	246.38	901.17	1,147.55
5th St. NW., south from Aspen St.....	12	353.47			
Garfield St. NW., between Massachusetts Ave.					
and 34th St.; Park Drive NW., east from 30th					
St.; Benton St. NW., between Rock Creek	8	2,561.90	818.24	1,982.93	2,801.17
Drive and 30th St.....	12	2.75			
B St. NE., west from 17th St.....	8	205.90	96.12	259.16	355.28
Pennsylvania Ave. SE., between 29th and 30th	8	676.49	220.24	539.06	759.30
Sts.....	12	6.28			
17th St. NE., between A and B Sts.....	8	498.15	143.62	414.50	558.12
	6	9.38			
8th St. NE., between K and L Sts.....	8	394.50	160.87	314.77	475.64
	6	4.33			
Douglas St. NE., between 28th St. and Bladen-	8	154.75	92.44	171.70	264.14
burg Road.....	12	2.95			
N St. NE., east from 3d St.; 3d St. NE., be-					
tween N St. and Florida Ave.....	8	311.53	98.19	215.05	313.24



TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	Feet.			
Kenyon St. NW., between 18th and 19th Sts.; 19th St. NW., between Kenyon and Kilbourne Sts.	8	803.78	\$237.60	\$722.20	\$959.80
11th St. NW., between Lamont St. and Park Road.	8	224.96	97.81	199.81	297.62
Summit Pl. NE., between Todd Pl. and U St.; Todd Pl. NE., between Summit Pl. and 2d St.; 2d St. NE., between Todd Pl. and Uland Terrace.	12	3.00			
39th St. NW., between Harrison and Hunting-ton Sts.; Harrison St. NW., between 39th St. and Belt Road.	8	1,356.02	429.05	1,213.03	1,642.08
13th St. NE., between Newton and Otis Sts.; Otis St. NE., east from 13th St.	8	1,047.02	274.87	898.54	1,173.41
Randolph St. NE., between 11th and 12th Sts.; Michigan Ave. NE., north from Randolph St.	8	564.01	165.58	524.22	689.80
Gresham Pl. NW., between 5th St. and Georgia Ave.	8	422.60	174.81	426.67	601.48
C St. SW., west from Delaware Ave.	6	10.58	179.89	437.34	617.23
Adams Mill Road NW., south from Summit Pl.	8	501.96	155.26	455.11	610.37
K St. SE., between 15th St. and L'Enfant Circle	8	432.32	177.98	257.00	434.98
Kearney St. NE., between 14th and 16th Sts.	6	4.50			
Legation St. NW., east from 41st St.	8	302.45	248.63	486.63	735.26
9th St. SE., north from N St.; 9th St. SE., south from M St.	8	618.52	294.13	852.18	1,146.31
U St. NE., between Lincoln Road and Summit Pl.	8	558.18	168.19	482.20	650.39
Aspen St. NW., between 4th and 5th Sts.	6	13.76	283.20	588.80	872.00
Kingle Road NW., west from 32d St.	8	685.02	235.19	574.40	809.59
Jackson St. NE., between 20th and 22d Sts.	8	485.41	92.87	299.21	392.08
Georgia Ave. NW., between Gallatin and Ham-ilton Sts.	8	271.83	129.31	345.54	474.85
14th St. NW., between Kennedy and Longfel-low Sts.	8	599.42	276.73	563.97	840.70
Prospect St. NE., east from Lincoln Road.	8	457.71	203.81	458.93	662.74
Webster St. NW., between 7th and 8th Sts.	8	408.76	198.44	479.33	677.77
34th Pl. NW., between Newark and Ordway Sts.	8	221.65	78.25	211.41	289.66
30th St. SE., south from R St.	8	356.85	100.56	232.76	333.32
Florida Ave. NW., south from California St.	8	553.25	177.25	463.02	640.27
West Virginia Ave. NE., between Morse and Neal Sts.; Neal St. NE., east from West Vir-ginia Ave.	6	143.04	44.13	109.61	153.74
New Hampshire Ave. NW., between Upshur St. and Grant Circle; 5th St. NW., between Upshur St. and Grant Circle.	8	8.15	133.68	270.93	404.61
Lowell St. NW., between 35th and 36th Sts.	8	317.65			
W St. SE., west from 18th St.	8	1,008.00	274.68	755.10	1,029.78
13th St. NW., between Randolph and Shep-herd Sts.	8	571.59	174.94	569.97	744.91
Reno Road NW., between 39th and Jenifer Sts.	8	818.44	254.95	577.12	832.07
Joelyn St. NW., east from Connecticut Ave.	4	4.25	257.49	573.65	831.14
13th St. NW., between Otis and Perry Sts.	8	681.55	118.69	406.33	525.02
Livingston St. NW., between 39th and 41th Sts.	8	12.88	391.57	399.10	537.67
McKinley St. NW., between 37th St. and Broad Branch Road; Broad Branch Road, NW., between McKinley and Morrison Sts.; Morrison St. NW., between Broad Branch Road and 33d St.; 33d St. NW., between Morrison and Livingston Sts.	8	381.56	138.57	399.10	537.67
S St. NE., between 3d and 4th Sts.	6	396.30	127.50	419.46	546.96
Chain Bridge Road NW., between Conduit Road and Sherrier Pl.; Sherrier Pl. NW., south from Chain Bridge Road.	8	447.25	128.68	380.70	509.38
Q St. SE., between 25th St. and 26th Pl.	8	561.05	238.13	726.16	964.29
Nebraska Ave. NW., south from Conduit Road.	8	871.19			
Neal St. NE., west from Trinidad Ave.; Trin-dad Ave. NE., between Neal and Morse Sts.; Morse St. NE., between Trinidad Ave. and Staples St.; Orren St. NE., between Morse St. and Florida Ave.; Staples St. NE., between Morse St. and Florida Ave.	8	2,097.41	658.56	1,585.23	2,243.79
New York Ave. NW., between 22d and 23d Sts.	6	5.80	215.49	391.46	606.95
30th St. SE., south of R St.	8	391.63	187.00	570.90	757.90
Todd Pl. NE., between 1st St. and Summit Pl.	4	15.13			
	8	733.76	89.32	276.49	365.81
	12	3.80	253.63	506.17	759.80
	8	294.18			
	8	634.13			
	6	14.35	630.82	1,773.96	2,404.78
	8	2,005.58			
	8	362.50	98.74	293.99	392.73
	8	104.55	29.94	76.69	106.63
	8	378.90	114.69	336.60	451.29

TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	<i>Inches.</i>	<i>Feet.</i>			
Hoover Road NE., north from Rhode Island Ave.	8	384.55	\$160.74	\$354.95	\$515.69
1st St. NE., between Todd Pl. and U St.	8	286.60	88.63	193.40	282.03
Tennessee Ave. NE., south from 14th St.; 14th St. NE., between Duncan and E Sts.	6	15.77	232.81	541.56	774.37
Perry Pl. NW., west from 14th St.	8	508.88	370.15	156.00	317.57
Livingston St. NW., east from 39th St.	8	425.03	105.07	266.17	371.24
	3	11.10			
Vermont Ave. NW., between H and I Sts.	6	23.95	485.61	776.28	1,261.89
	8	410.15			
Ives Pl. SE., east from 14th St.	6	9.95	117.51	325.41	442.92
	8	350.60			
Ninth St. NW., north from Barry Pl.	6	16.68	135.13	331.29	466.42
	8	434.18			
South Capitol St., south from Q St.	8	755.83	214.42	626.71	841.13
Kentucky Ave. SE., south from H St.	8	120.18	34.19	131.48	165.67
K St. SE., between 7th and 8th Sts.	6	4.40	123.81	323.95	447.76
	8	399.30			
South Carolina Ave. SE., between Kentucky Ave. and 14th St.	8	540.55	153.62	392.02	545.64
18th St. NE., between Kearney and Newton Sts.; Newton St. NE., west from 18th St.	8	961.50	293.08	878.30	1,171.38
Randolph St. NW., west from 8th St.	8	256.25	95.06	213.56	308.62
12th St. NE., between Everts St. and Rhode Island Ave.	8	105.05	40.20	81.68	121.88
35th St. NW., between Massachusetts Ave. and Garfield St.; 34th Pl. NW., between Massachusetts Ave. and Cathedral Ave.	4	1.50			
34th St. NW., north from Garfield St.; 33d Pl., north from Garfield St.	8	2,951.38	780.08	1,986.46	2,766.54
Sherman Ave. NW., south from Irving St.	8	190.41	77.63	201.70	279.33
Michigan Ave. and Bunkerhill Road, between Randolph St. and Queen's Chapel Road.	8	3,452.88	1,032.70	2,879.80	3,912.50
Harvard St. NW., east from 16th St.	8	434.90	160.87	454.53	615.40
Longfellow St. NW., between 14th and 16th Sts.	8	848.25	369.94	742.24	1,112.18
Varnum St. NW., between 7th and 8th Sts.	6	23.16			
	8	306.22	149.19	202.92	352.11
11th St. NW., between Euclid and Fairmont Sts.	6	5.15			
	8	366.03	303.70	327.31	631.01
McPherson Pl. NW., between I and K Sts.	6	2.55			
	8	395.65	246.19	307.71	553.90
Fuller St. NW., east from 15th St.	8	170.39	86.55	197.92	384.47
Johnson Ave. NW., between R and S Sts.	6	7.80			
	8	503.27	233.81	811.07	1,044.88
9th St. NW., between Sheridan and Tuckerman Sts.	8	383.65	82.24	321.26	403.50
5th St. NW., between Aspen and Butternut Sts.	8	415.90	66.81	274.89	341.70
12th St. NE., between Michigan Ave. and Sigbee Pl.	8	456.20	107.86	313.78	421.64
	3	3.83			
Georgia Ave. NW., intersection of Upshur St.	8	176.25	121.01	167.71	288.72
Hobart Pl. NW., between Sherman and Georgia Aves.	8	114.45	57.94	87.25	145.19
1st St. NW., between Kennedy and Longfellow Sts.	8	221.15	58.87	151.17	210.04
M St. SW., across James Creek Canal Bridge.	8	311.67	181.10	299.69	480.79
12th St. NE., between Newton and Otis Sts.	8	325.68	127.69	302.45	430.14
	6	9.50			
Tracy Pl. NW., between 23d and 24th Sts.	8	569.05	171.75	442.55	614.30
10th Pl. SE., between Alabama Ave. and Savannah St.	8	489.95	167.19	371.24	538.43
Sherman Ave. NW., north from Barry Pl.	8	281.22	129.95	279.22	409.17
14th St. SE., south from K St.	8	199.64	68.87	253.29	322.16
Sherman Ave. NW., north from Barry Pl.	8	154.11	79.44	114.75	194.19
4th St. SE., between A and B Sts.	6	15.05			
	8	342.83	132.14	489.71	621.85
Nichols Ave. SE., between Trenton and Sterling Sts.	8	290.77	77.56	201.46	279.02
Webster St. NW., between Georgia and Iowa Aves.	8	308.95	98.46	213.11	311.57
Randolph St. NE., east and west from intersection of 13th St.	8	491.72	151.86	404.73	556.59
Perry Pl. NW., west of 14th St.	8	42.60	22.06	31.73	53.79
6th St. SW., between M and N Sts.	6	5.25			
	8	324.97	150.68	347.14	497.82
High St. SE., north from Maple View Pl.	6	4.41			
	8	183.88	85.25	154.15	239.40
Orren St. NW., between Morse and Neal Sts.; Staples St. NW., north from Morse St.	8	494.79	119.38	350.62	470.00

TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	<i>Inches.</i>	<i>Feet.</i>			
Ontario Road NW., between Kalorama Road and Euclid St.....	8	351.95	\$139.99	\$232.12	\$372.11
Dahlia St. NW., east from 7th St.....	8	259.57	138.52	253.78	392.30
46th St. NW., between Lowell and McCombs Sts.; Ridge Road NW., from McCombs St. to Nebraska Ave.....	8	1,276.30	428.62	986.11	1,414.73
Harrison St. NW., between 42d St. and Wisconsin Ave.....	8	500.63	151.56	367.42	518.98
14th St. NE., south from A St.; A St. NE., west from 14th St.....	8	562.95	230.43	409.58	640.01
Monroe St. NE., between 15th and 16th Sts.....	8	603.39	268.81	480.96	749.77
Adams St. NW., west from North Capitol St.....	8	212.26	68.19	154.08	222.27
19th St. NW., between Park Road and Monroe St.....	8	209.55	98.37	214.68	313.05
23d St. NW., between Kalorama Road and Wyoming Ave.; 23d St. NW. between California St. and Bancroft Pl.....	8	649.77	266.18	551.14	817.32
Kearney St. NE., east from 9th St.....	6	6.51			
	8	170.49	80.11	141.12	221.23
Taylor St. NW., between 5th St. and New Hampshire Ave.....	8	468.45	162.93	435.35	598.28
O St. SE., between 1st and 2d Sts.....	6	8.42			
	8	629.32	232.25	624.06	856.31
48th St. NW., between Brandywine and Davenport Sts.....	8	901.72	326.44	705.51	1,031.95
Sherman Ave. NW., between Barry Pl. and Euclid St.; 9th St. NW., between Barry Pl. and Euclid Sts.....	6	2.25			
	8	354.47	235.50	247.85	483.35
Ingomar St. NW., between 41st and 42d Sts.; 41st St. NW., between the two intersections of Ingomar St.....	8	629.15	163.44	555.25	718.69
	6	10.00			
North Carolina Ave NE., at A St.....	8	96.30	44.25	104.97	149.22
	4	9.00			
Adams Mill Road NW., between Quarry Road and Kenyon St.; Kenyon St. NW., between 19th and Adams Mill Road.....	6	4.15			
	8	1,251.76	424.05	1,292.28	1,716.33
	4	7.65			
Belmont St. NW., west of 14th St.....	6	3.60			
	8	614.78	314.00	549.60	863.60
	4	21.90			
Garfield St. NW. between 32d St. and 33d Pl.; Rock Creek Drive NW., between Normanstone Drive and 28th St.; 34th St. NW., between Fulton St. and Observatory Circle.....	6	2.40			
	8	18.24	648.99	2,253.76	2,902.75
	12	1,891.57			
	4	14.32			
14th St. SW., between B and Water Sts.; Water St. SW., between 12th and 14th Sts.; 12th St. SW., between E and Water Sts.....	6	41.70			
	8	85.88	1,780.88	5,702.11	7,482.99
	12	2,683.69			
Alabama Ave. SE., between 10th Pl. and Congress St.....	8	39.68			
	12	1,968.85	676.81	2,430.30	3,107.11
Garfield St. NW., between 34th St. and 33d Pl.; 34th St. NW., between Garfield and Fulton Sts.; Rock Creek Drive NW., between Massachusetts Ave. and Park Drive; Park Drive NW. (north side), square 2140 and Park Drive NW. (south side) from Rock Creek Drive.....	4	16.35			
	8	48.35	1,122.06	3,133.32	4,255.38
	12	2,462.36			
	8	154.94			
14th St., between Webster St. and Iowa Ave.....	12	1,640.08	926.00	2,241.03	3,167.03
	8	20.57			
14th St. NW., between Hamlin and Irving Sts.....	12	316.40	121.80	471.29	593.09
Quarles St. NE., between Kenilworth Ave. and Olive St.....	8	14.20	89.19	443.49	532.68
	12	333.80			
	4	35.90			
18th St. SE., between Good Hope Road and Minnesota Ave.; Good Hope Road SE., between 18th St. and 28th Sts.....	6	16.96			
	8	6.65	2,172.44	6,507.73	8,680.17
	12	4,956.09			
Rhode Island Ave. NE., between Hamlin and 20th Sts.....	12	858.70	296.99	992.60	1,289.59
	4	8.15			
U St. NW., between 18th St. and Florida Ave.....	12	223.29	334.86	454.87	789.73
	3	4.75			
L St. NW., between 11th and 12th Sts.; 12th St. NW., between I and L Sts.; I St. NW., between 12th and 17th Sts.; 15th St. NW., between H and I Sts.; Connecticut Ave. NW., between H and I Sts.....	4	67.45			
	6	298.61			
	8	64.00	4,688.05	12,802.87	17,490.92
	12	5,462.56			
	24	5.05			
	4	22.00			
28th St. SE., south from Good Hope Road; Stanton School grounds.....	8	42.65	453.01	1,325.56	1,778.57
	12	887.18			

TABLE IV.—Statement showing cost of water mains laid during the year ended June 30, 1913—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	<i>Inches.</i>	<i>Feet.</i>			
30th St. SE., between Pennsylvania Ave. and R St.; R St. SE., east from 30th St.	4 12	73.07 772.44	\$560.93	\$1,209.38	\$1,770.31
Benning Road NE., between 19th and 20th Sts.	12	298.00	199.87	548.89	748.76
From Alabama Ave. SE., near 10th St. to water tower No. 1.	4 12	3.75 151.55	108.37	298.05	406.42
North Capitol St., between Longfellow and Madison Sts.	8 12	129.55 328.25	122.43	543.11	665.54
Benning Bridge, Eastern Branch.	12 4	1,035.51 2.80	649.81	2,440.79	3,090.60
Benning Road NE., between Anacostia Ave. and Cool Spring Road.	6 8 12 16	49.45 34.40 124.30 1,965.07	1,036.18	4,100.00	5,136.18
Benning Road NE., between 20th and Cool Spring Road.	4 8 12 20	5.80 17.44 5.75 1,647.67	1,413.03	4,230.50	5,643.53
Fire hydrants erected in new locations.	6 8 12 3	20.40 220.15 175.30 359.74	580.89	1,572.78	2,153.67
	4 6 8 10	359.74 1,894.65 598.93 77.21			
Connections and blow-offs in various sections.	12 16 20 24 30 36	559.76 179.56 237.99 19.98 9.53 13.42	8,869.52	15,045.44	23,914.96
Lateral mains (1-inch to 2-inch diameter) 2,066 feet.			504.24	925.03	1,429.27
Unfinished mains, 1912.			66.24	905.90	972.14
Unfinished mains, 1913.	8	243.64	380.27	1,213.71	1,593.98
General inspection.			1,704.00	930.00	2,634.00
Total cost.			63,337.67	153,093.26	216,430.93
Charged to 1912.			775.76	3,175.69	3,951.45
Charged to 1913.			62,561.91	149,917.57	212,479.48
Total.			63,337.67	153,093.26	216,430.93

TABLE V.—Statement of length and cost of water mains laid from July 1, 1878, to June 30, 1913, paid for out of the water department funds.

Year.	48-inch.	42-inch.	36-inch.	30-inch.	24-inch.	20-inch.	16-inch.
	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>
1878.....			40				
1879.....							
1880.....							
1881.....							
1882.....							
1883.....							
1884.....							
1885.....							
1886.....							
1887.....						4,835	
1888.....							
1889.....					2,312	5,140	
1890.....							
1891.....							
1892.....						2,926	2,500
1893.....							
1894.....						273	
1895.....					6,617		
1896.....					294	8,874	
1897.....						2,180	
1898.....							
1899.....							
1900.....			10,902		35	1,914	
1901.....						1,282	48
1902.....				1,227		203	
1903.....	2,123		14,601			35	
1904.....	4,019	23	5,231	6,332	18	8,668	24
1905.....			2,701	9	42		
1906.....	8,155		97		40	716	
1907.....			2,697	3,650	4		48
1908.....				20	10	98	
1909.....				13	35	11	
1910.....						15,601	25
1911.....				4,384	325	14,136	51
1912.....	12		9	9		18,165	11,416
1913.....			13	9	25	1,888	2,145
Total.....	14,309	23	36,291	15,653	9,757	86,950	16,257

Year.	12-inch.	10-inch.	8-inch.	6-inch.	4-inch.	3-inch.	Total.	Total cost.
	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	
1878.....	3,719			12,781	30		16,570	\$14,846.20
1879.....	7,409			8,516	1,397		17,322	19,436.03
1880.....				3,024			3,024	
1881.....				3,709			3,709	3,110.70
1882.....				1,920			1,920	1,626.43
1883.....	1,625		26	4,084			5,735	8,073.70
1884.....	1,038			8,972			10,010	10,492.51
1885.....	763			27,766	338	485	29,372	25,865.35
1886.....	1,938	791		35,192		6,623	44,544	40,025.10
1887.....	1,124	2,998		30,041	292	7,124	46,414	56,951.00
1888.....	731			9,123	9,148	3,937	22,939	17,626.63
1889.....	5,626	2,784		36,742	6,571	8,753	67,228	79,342.16
1890.....				34,737	2,856	2,855	40,448	19,113.54
1891.....	5,201			56,893	3,142	11,013	76,249	49,702.65
1892.....	10,163			88,709	3,342	1,286	108,926	74,733.04
1893.....	6,473			54,173	8,336	3,458	72,440	56,339.39
1894.....	39,386			86,632	12,832	2,918	142,046	126,599.55
1895.....	27,731			103,785	5,442	2,733	146,308	134,502.31
1896.....	11,873			61,464	1,738	3,262	87,505	89,395.12
1897.....	6,877			71,266	10,595	992	91,910	77,954.81
1898.....	7,698		907	52,371	6,735	2,790	70,501	48,661.70
1899.....	2,220			84,291	4,662	2,701	95,788	65,774.52
1900.....	157			53,838	4,211	2,116	72,569	114,784.72
1901.....	10,026			52,018	2,187	935	65,166	47,426.71
1902.....	14,010			35,481	1,414	1,632	53,967	57,676.33
1903.....	9,411			32,264	2,004	357	60,795	98,498.90
1904.....	13,802	68		40,767	2,913	1,637	85,247	73,402.12
1905.....	1,014			31,750	1,228	2,671	39,993	70,426.66
1906.....	3,985			34,880	551	722	49,927	197,066.91
1907.....	12,066	6		55,798	2,209	3,081	80,428	114,411.42
1908.....	5,513			50,428	3,279	1,016	63,453	115,701.97
1909.....	6,478	4		57,010	4,283	1,029	70,555	214,512.38
1910.....	18,875	7		83,787	3,497	1,292	125,984	283,266.89
1911.....	27,325			91,569	4,799	231	147,821	254,608.58
1912.....	17,837			88,237	2,577	596	142,550	212,479.48
1913.....	27,335	77		91,859	3,669	489	131,695	
Total.....	309,430	6,735	627,018	1,078,797	114,036	76,522	2,391,778	3,384,601.64

TABLE VI.—*Statement of the average cost per foot for laying water mains for the year ended June 30, 1913.*

	Linear feet.	Cost of labor per linear foot.	Cost of material, cuts to pavements, etc., per linear foot.	Total cost per linear foot laid.
4-inch.....	3,438	\$0.367	\$0.938	\$1.305
6-inch.....	795	.612	1.152	1.764
8-inch.....	91,170	.351	.834	1.185
12-inch.....	27,527	.543	1.591	2.134
16-inch.....	1,965	.527	2.086	2.613
20-inch.....	1,676	.843	2.524	3.367

NOTE.—Excessive cost of 4-inch and 6-inch mains due to having been laid in short sections in alleys and connections necessitating additional labor and material.

TABLE VII.—*Statement of number of public wells in use during the year ended June 30, 1913.*

	Shallow wells.	Deep wells.	Total.
In service June 30, 1912.....	11	47	58
Abandoned during year ended June 30, 1913.....	2	2	4
Total in service June 30, 1913.....	9	45	54

## REPORT OF THE WATER REGISTRAR.

WASHINGTON, October 7, 1913.

SIR: I have the honor to submit the annual report of the revenue and inspection branch of the water department, showing in detail the work accomplished during the fiscal year ended June 30, 1913.

## OFFICE WORK.

Accounts audited.....	114,746
Accounts posted and checked.....	103,262
Accounts indexed.....	12,018
Authority cards examined and filed.....	3,018
Bills drawn for agents' lists.....	14,877
Cards canceled:	
Meter.....	105
Schedule.....	323
Card records transferred to books.....	1,888
Cards retired.....	9,787
Changes made on records, ratings, etc.....	9,762
Changes of house numbers on records.....	657
Curb cock and box locations recorded.....	5,467
Curb cocks issued.....	2,181
Cut-off orders made and recorded.....	7,353
Delinquent notices made and compared.....	27,854
Delinquent rent lists made and compared.....	5,828
Emergency examinations made.....	1,033
Examination of service pipes recorded.....	3,134
Files indorsed and returned.....	201
House-to-house examinations recorded.....	479
Installation cards made, meter.....	9,176
Letters and cards received.....	3,368
Letters and cards sent out.....	18,142
Meter accounts canceled:	
Private.....	35
District of Columbia.....	70
Meter bills made and checked.....	45,838
Meter computations made and checked.....	179,557
Meter charges recorded.....	2,437

## Meters ordered out for various reasons:

Private.....	565
District of Columbia.....	1, 290
Meter-repair slips from pump house recorded.....	1, 157
Meter tests received and recorded.....	3, 093
New meter account cards made and checked.....	8, 821
New meter accounts opened.....	9, 129
New schedule accounts opened.....	2, 298
Notice of leaks to agents, etc.....	5, 727
Notices to plumbers for meter tests.....	172
Permits for use of fire hydrants.....	90
Permits for water for building purposes.....	1, 613
Plats made.....	105
Plats made of tap locations.....	3, 056
Plumbers' permits examined.....	3, 134
Refunds forwarded.....	196
Reports checked.....	6, 138
Reports made, weekly.....	52
Schedule bills made and checked.....	71, 932
Special examination slips made and filed.....	9, 678
Special leak examinations recorded.....	72, 671
Special examinations entered.....	17, 021
Taps issued.....	2, 143
Tap locations recorded.....	3, 056
Tap record cards made, new.....	14, 554
Turn-on orders made and recorded.....	3, 609
Water-main measurements given.....	10, 422
Work orders made.....	6, 681

## FIELD WORK—GENERAL.

Delinquent notices served.....	10, 761
House-to-house leaks found.....	1, 576
Meters read.....	179, 557
New services passed.....	2, 014
Repairs to service pipes passed.....	1, 120
Special examinations.....	33, 769
Taps made:	
For services.....	2, 143
Water department (general).....	198
	<hr/> 2, 341

## FIELD WORK—LEAKS AND WASTES.

Abandoned services cut off at main.....	1, 160
Cut off at box, leak.....	1, 272
Cut off at main, leak.....	63
Cut off by request.....	417
Cut off for vacancy.....	2, 872
Cut off, nonpayment:	
Meters.....	427
Schedule.....	346
Cuts repaired.....	1, 448
Leaks found on mains.....	35
Locating taps and stopcock boxes.....	9, 983
Miscellaneous work in connection with leaks, examinations.....	21, 143
Service locations made with instrument.....	1, 066
Special examinations.....	4, 920
Special leak examinations:	
First inspection.....	11, 066
Second and third inspections.....	28, 334
Turned on by request.....	3, 198

## FIELD WORK, SERVICE PIPES, ETC.

Connecting services with main.....	188
Leaks repaired.....	40
New curb cocks installed.....	76
Pressure regulators installed.....	16
Repairs made to stopcock boxes.....	1, 923

## Meters taken out:

## Private—

Choked.....	20
Not registering.....	313
For repairs.....	9
Leaking.....	129
Making noise.....	3
For test.....	91
	<hr/> 565

## District of Columbia—

Burst.....	4
Choked.....	56
Not registering.....	999
For test.....	18
For repairs.....	46
House torn down.....	27
Leaking.....	122
Making noise.....	4
For test, request.....	14
	<hr/> 1,290

## Meters repaired in place (private).....

20

## Meter pits, District of Columbia:

Brought to grade.....	537
New pit tops installed.....	31
Relocated.....	10
	<hr/> 628

## Meters, District of Columbia:

Reversed.....	16
Out and abandoned.....	70
Installed.....	9,978
Municipal meters installed.....	7
Miscellaneous inspections.....	8,300

## ORGANIZATION.

For convenience in handling the work the force is subdivided as follows:

*Subdivision 1 (W. R. Chapell, in charge).*—Posting, checking, auditing accounts, making bills, preparing cut-off notices, notifications for nonpayments, and general supervision of all work pertaining to flat-rate accounts.

*Subdivision 2 (E. H. Grove, in charge).*—Meter accounts, meter computations, meter readings, regular and excess consumptions, inspection of new services, tapping water mains, reports, records, refunds, leak records, correspondence, and general supervision of all matters pertaining to meter accounts.

*Subdivision 3 (J. A. Mudd, in charge).*—The work of this subdivision consists in verification of information furnished by the owners of premises where water is to be introduced, as to house, lot numbers, and rating, and also changes of street names and house numbers and entry of same on the office records.

*Subdivision 4 (C. F. Eckloff, in charge).*—The duties of this subdivision consists in the examining of all permits for the introduction of water, the issuing of taps and stopcocks, and permits for use of water for building purposes.

*Subdivision 5 (H. C. Schaeffer, in charge).*—Records for meter installation, repairs, cost of maintenance, and inspections in field.

*Subdivision 6 (A. Marks, in charge).*—Leak examinations, cutting off and turning on water, locating services, repairs and connecting of services, and repairs to stopcock boxes.

*Subdivision 7 (W. F. Sullivan, in charge).*—Meter installation and removal of meters for repairs.

## LEAKS AND WASTES.

Forty-two thousand and sixty-six examinations of leaks were made during the year, including ordinary leaks in house fixtures and more complicated cases of leaks from underground services and investigation of complaints of water running into cellars.

One thousand one hundred and sixty abandoned water services were disconnected at tap in main and 2,872 services to vacant houses were cut off at curb cock.

The cutting off of abandoned services and services to vacant houses has heretofore been a source of considerable trouble in view of the fact that there was no record of the location of the older services. This work has been materially facilitated by the use



of an electrical device invented by an employee of this office, since by its use it is possible to locate every service in a very short time without unnecessary excavations. This instrument has proved particularly profitable in the installation of meters by determining the exact location of every service where a meter was to be installed, thus avoiding the necessity of a search by excavation for the service and the delay caused thereby in metering the premises.

During the year there were 1,066 cases necessitating the use of this instrument.

#### SERVICE CONNECTIONS.

Two thousand and fourteen new service connections were made, inspected, and locations recorded during the year.

One thousand one hundred and twenty repairs, etc., to water services and appurtenances were inspected and recorded.

In order to give prompt action, it is the aim of the office to make inspection of service pipes within one hour of the time specified by the plumber. Owing to the great increase in the work of this character, it has been necessary at times to send out as many as four men to assist the inspector having this work in charge. These men while not so engaged are employed on clerical work in the office.

#### WATER METERS.

The number of meters installed during the year was 10,150 and the number discontinued was 105, making the total number now in use 33,656.

To facilitate the work in connection with the meters in service, the following system has been adopted and has been in successful operation since its inception:

Meters are grouped as follows: Private meters where the consumption exceeds 100,000 cubic feet per quarter; private meters where the consumption does not exceed 100,000 cubic feet per quarter, fire-service meters, District meters, District meters in premises where leaks were found, and District meters in municipal institutions.

Private meters in business establishments that exceed 100,000 cubic feet per quarter are read weekly and a card is provided by this office, which is posted in some convenient place on the premises, and it is the duty of the meter reader to record the consumption on this card. This plan has proved satisfactory both to the consumer and the office, inasmuch as it has reduced the number of complaints in regard to large bills to a minimum, and also keeps the owner of the place in touch with his account from week to week, which has resulted in prompt action on his part in cutting down all waste of water.

Private meters where the consumption does not exceed 100,000 cubic feet per quarter are read nine times a year. When it is found that there has been an extraordinary usage of water, an examination is made for leaks, and if any are discovered the responsible party is notified.

Detector meters are read monthly, and if any show registration an investigation is immediately made as to the cause and an explanation demanded.

District meters in municipal institutions are read monthly and the responsible department notified if leaks or wastes are found.

District meters installed on service pipes supplying private residences are read at frequent intervals, averaging about nine times a year. Special reading cards are made out and premises kept under constant observation where the rate of consumption is much in excess of the proportion based upon the minimum payment in advance. Where leaks are found in metered premises the occupants and the agents (if they have a request filed for such information) are notified, and in case no attention is paid to such warnings and the leaks are large enough to justify such action, the supply is discontinued until the proper repairs are made. For convenience in handling such accounts, houses are divided into three classes: First, large houses where considerable water is required; in such places, if abnormal use of water is indicated by the meter, the occupant is notified by card to that effect and the case is dropped. Second, medium sized houses; if the consumption is found to be excessive a notice is sent to that effect, and if after a reasonable time no change is observed, an examination is made, and if any leaks are found the occupant is again notified that if this condition is allowed to continue large bills will naturally result. Third, small houses which are occupied in many instances by irresponsible parties; in such cases, where an extraordinary wastage of water is found, the supply is discontinued after one notice has been served.

In the first two classes the notices are generally met with prompt action on the part of the occupant or agent; but in the latter class considerable trouble is experienced, as the principal waste can be traced to these small houses.

## INSTALLATION OF METERS.

The work during the year consisted in metering portions of the first high-service area consisting of the territory covered in the northeast section of the city between First and Seventeenth, East Capitol and E Streets, and in the northwest section, between North Capitol and Ninth Streets, L Street and Florida Avenue; also square bounded by Ninth and Tenth, L and M Streets. Meters were also installed on new services in areas previously covered.

About 70 per cent of the services uncovered were of wrought iron, and in the northwest section a great number of composition services were found. It was necessary before the meters could be installed to repair about 40 per cent of these services, owing to their bad condition.

Where it was found necessary, new curb cocks and boxes were installed.

The work has been considerably handicapped, owing to the remote location of dumps and the necessity of long hauls.

The following shows the average cost of installing a meter:

Meter.....	\$5.00
Material.....	3.67
Labor.....	2.31
Total.....	10.98

The following shows the average force engaged in installation:

In charge, master plumber.....	1
Plumbers.....	2
Laborers.....	24
2-horse wagons.....	2
1-horse wagon.....	1

The following additional work was performed in connection with the work of installing meters:

Adjusting meter pits to grade; adjusting curb-cock boxes to grade; removing meters for test, etc.; repairing minor leaks on services; setting of temporary meters, etc.

## REVENUES.

The table of comparative revenues shows an increase over the previous year of \$108,421.27, which is due for the greater part to the increase in water rates which became effective July 1, 1912.

## TABLES.

- Table 1 shows statement of collection.
- Table 2 shows comparative statement of revenues.
- Table 3 shows number of water meters in service.
- Table 4 shows number of water meters repaired.
- Table 5 shows consumption of water in private residences.
- Table 6 shows consumption of water in buildings owned and controlled by the District of Columbia.
- Table 7 shows consumption of water in premises which receive a free allowance.
- Table 8 shows consumption of water in business establishments.
- Table 9 shows general information.

## CARD-RECORD SYSTEM.

There are about 450,000 office records under the card system.

## PRINTING.

There were 496,900 blank forms, cards, etc., printed during the year, covering all the work of this character required by the water department.

The installation of the printing plant has resulted in great economy of time in obtaining forms and considerable saving in cost.

## WATER RATES.

There has been no change in water rates during the past year. The rate for domestic purposes is charged according to stories and front feet. On all tenements two stories high with frontage of 16 feet or less, \$5 per annum. For each additional front foot or fraction thereof greater than one-half, 31 cents.

For each additional story or part thereof, one-third of the charges as computed above. Business premises are rated according to their size, class, volume of business, and water facilities, and rate from \$1 to \$25. If the flat rate on business establishments reaches \$25 or more, the owner or occupant is required to install a water meter at his own expense.

*Meter rates.*—A minimum rate of \$4.50 per annum is charged against all consumers supplied with water through meters, which allows the use of 7,500 cubic feet of water during the fiscal year, water used in excess of this quantity being charged for at the rate of 4 cents a hundred cubic feet.

CONDITION OF WORK.

Notwithstanding the fact that there was a large increase in business over that of the previous year, the work was practically up to date at the close of the year.

This result was owing to the faithful cooperation of the employees, and their willing response to meet the demands of the service by frequently working after hours, for which I now take pleasure in expressing my appreciation.

Very respectfully,

GEO. W. WALLACE,  
Water Registrar.

The SUPERINTENDENT, WATER DEPARTMENT.

TABLE 1.—Statement of collections.

Water rents:	
Schedule.....	\$283,058.02
Meters.....	352,896.64
Total.....	635,954.66
Water-main assessments.....	138,693.75
Taps and stopcocks.....	8,685.50
Building purposes.....	\$4,053.98
Sale of old material.....	3,153.81
	7,207.79
	790,541.70

TABLE 2.—Comparative statement of revenues.

Fiscal year.	Water rents.	Water-main assessment.	Taps and stop cocks.	Miscellaneous.	Total revenue.
1898.....	\$264,884.48	\$58,152.56	\$6,910.65	\$1,104.42	\$330,952.11
1899.....	276,065.54	62,937.43	6,327.00	1,545.15	346,875.12
1900.....	286,257.63	53,420.70	5,208.15	4,452.53	349,339.01
1901.....	303,557.19	56,359.72	6,140.85	3,064.39	369,122.15
1902.....	318,404.39	65,962.47	6,368.16	4,659.00	395,394.02
1903.....	326,789.26	70,880.32	6,787.77	3,628.18	408,085.53
1904.....	340,131.72	51,575.87	6,522.67	2,839.66	401,069.92
1905.....	349,264.26	32,192.77	8,603.80	5,737.69	395,798.52
1906.....	359,699.35	34,352.70	9,100.00	2,633.85	405,785.90
1907.....	466,452.19	51,313.97	8,487.10	8,697.66	535,950.92
1908.....	477,306.64	57,462.39	8,688.10	4,050.32	547,507.95
1909.....	498,598.31	57,654.06	10,674.15	5,826.22	572,752.74
1910.....	505,488.52	76,905.15	11,794.78	5,995.91	600,184.36
1911.....	517,408.69	101,987.53	8,924.35	5,133.13	633,453.70
1912.....	540,632.48	122,458.81	11,438.65	7,590.49	682,120.44
1913.....	635,954.66	138,693.75	8,685.50	7,207.79	790,541.70
1914 <sup>1</sup> .....	665,000.00	110,000.00	10,000.00	6,000.00	791,000.00
1915 <sup>1</sup> .....	688,000.00	110,000.00	10,000.00	6,000.00	814,000.00

<sup>1</sup> Estimated.

[illegible]

TABLE 4.—*Meters repaired.*

	$\frac{3}{8}$ -inch.	$\frac{1}{2}$ -inch.	1-inch.	1 $\frac{1}{2}$ -inch.	2-inch.	3-inch.	4-inch.	6-inch.	Total.
Meters repaired.....	985	177	62	49	28	9	10	1	1,321
Abutments.....	1								1
Bonnet.....	2	3							5
Bonnet screws.....	4								4
Bottom cases.....	13	1							14
Bottom center shaft.....					2				2
Dial plates.....		4	1						5
Disks.....	362	27	27	8	2				426
Disks damaged by hot water.....	3				2				5
Disks chamber.....		2							2
Disks shaft.....	1	22	10						33
Flange bolts.....	129	44	22	2					197
Gasket flanges.....	66	27	6	3					102
Gasket registers.....	5								5
Gears.....	3	1		6	7	2	2	1	22
Glass.....	10	5	1	1					17
Lids.....	19	6	2	4					31
Pointers.....	2								2
Registers.....	113	2							115
Register spindles.....	3								3
Top cases.....	13	2		1					16
Top center shafts.....					2				2
Train gears (intermediate).....	65	94	38	9	10	2	2		220
Total parts.....	814	240	107	34	25	4	4	1	1,229

Meters in service, including registers.....	33,656
Cost of labor and material for maintenance.....	\$11,085.14
Average cost per meter for maintenance.....	\$0.33

TABLE 5.—*Showing the number of houses that have paid the minimum rate of \$4.50, those that have exceeded the amount allowed under the payment of this amount, and a comparison between the amount of water allowed and the amount of water used and the amount paid under the flat rate and meter system.*

	Houses.	Meters.	Amount of water actually used.	Amount of water allowed per annum under payment of \$4.50.	Difference.	Amount used in excess.	Paid meter rate 1913.	Paid schedule rate 1908 to 1912.
Paid minimum rate....	9,121	9,121	<i>Cubic feet.</i> 42,645,900	<i>Cubic feet.</i> 68,407,500	<i>Cubic feet.</i> 25,761,600		\$41,044.50	\$63,208.53
Paid fractional minimum rate.....	362	362	1,096,800	1,717,500	620,700		1,033.81	2,508.66
Paid in excess of the minimum rate.....	9,570	9,570	114,741,500	71,775,000		42,966,500	60,251.79	66,320.10
Paid in excess of fractional minimum rate.....	330	330	2,837,800	1,454,200		1,383,600	1,515.24	2,286.90
Two or more houses on one service, minimum rate.....	350	172	1,816,600	2,625,000	808,400		1,575.00	2,425.50
Two or more houses on one service, excess.....	422	184	7,118,200	3,165,000		3,953,200	3,480.28	2,924.46
Premises on which an allowance was made for underground leaks.....	127	109	4,191,800	1,876,500	2,315,300		878.16	880.11
Vacated before payment could be enforced.....	248	247	4,494,600	2,607,100	1,887,500		1,397.87	1,718.64
No payment for fiscal year 1913, vacant.....	216	216	151,000					1,496.88
Total.....	20,746	20,311	179,094,200	153,627,800	31,393,500	48,303,300	111,176.65	143,769.78

Meters in operation.....	20,311
Meters installed during fiscal year 1912, to take effect July 1, 1913.....	9,978
Total meters.....	30,289
Premises.....	20,746
Amount paid.....	\$111,176.65
Average payment for each.....	5.35
Rate (considering only the houses occupied during the full year):	
Schedule.....	6.93
Meter.....	5.47
Difference.....	1.46

TABLE 6.—Meters installed in various buildings owned and controlled by the District government.

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
SCHOOLS.				SCHOOLS—continued.			
	<i>Cubic feet.</i>				<i>Cubic feet.</i>		
Abbott.....	94,300	1	1	Ludlow.....	279,600	1	1
Adams.....	190,000	1	1	M Street High.....	495,200	1	1
Addison.....	343,600	1	1	Mc Cormick.....	33,800	1	1
Ambush.....	136,600	1	1	McKinley.....	1,054,400	1	1
Amidon.....	157,700	1	1	Madison.....	151,000	1	1
Armstrong.....	598,300	1	1	Magruder.....	163,100	1	1
Banneker.....	258,400	1	1	Manual Training No.			
Bell.....	473,000	1	1	164.....	433,900	1	1
Berret.....	164,200	1	1	Maurry.....	240,700	1	1
Birney.....	189,200	1	1	Military Road.....	52,100	1	1
Blair.....	267,000	1	1	Minor.....	243,100	1	1
Blake.....	115,400	1	1	Monroe.....	558,900	1	1
Blow.....	632,400	1	1	Montgomery.....	226,800	1	1
Bowen.....	75,100	1	1	Morgan.....	587,700	1	1
Bowen (S. J.).....	220,000	1	1	Morse.....	134,900	1	1
Bradley.....	165,700	1	1	Mott (new).....	696,900	1	1
Brent.....	211,700	1	1	Mott (old).....	27,900	1	2
Briggs.....	269,400	1	1	Orr.....	92,800	1	1
Brightwood.....	82,400	1	1	Patterson.....	491,100	1	1
Brightwood Park.....	107,500	1	1	Payne.....	218,800	1	1
Brookland.....	88,300	1	2	Peabody.....	260,500	1	2
Bruce.....	172,300	1	1	Petworth.....	264,500	1	1
Bryan.....	182,000	1	1	Phelps.....	330,500	1	1
Buchanan.....	167,800	1	1	Pierce.....	193,000	1	1
Business High.....	1,986,300	1	1	Polk.....	136,100	1	1
Carberry.....	238,600	1	1	Potomac.....	231,300	1	1
Chevy Chase and Annex.....	331,100	1	1	Powell.....	272,900	1	1
Cleveland.....	271,000	1	1	Randall.....	116,800	1	1
Congress Heights.....	175,100	1	1	Reservoir.....	288,300	1	1
Cook.....	138,200	1	1	Ross.....	311,700	1	1
Henry D. Cooke.....	490,100	1	2	Seaton.....	370,800	1	2
Corcoran.....	208,100	1	1	Simmons.....	435,500	1	1
Cordozo.....	106,500	1	1	Slater.....	294,600	1	1
Cranch.....	89,300	1	2	Smallwood.....	93,400	1	1
Crummell, Alex.....	226,900	1	1	Stevens.....	653,700	1	1
Curtis.....	124,100	1	1	Sumner.....	230,600	1	1
Denison.....	396,600	1	1	Syphax.....	167,100	1	1
Dent.....	324,000	1	1	Takoma.....	94,800	1	1
Douglass.....	604,200	1	1	Taylor.....	274,300	1	1
Eastern High.....	145,200	1	1	Tenley.....	209,800	1	1
Eaton.....	175,000	1	1	Thomson.....	245,900	1	1
Eckington.....	250,400	1	1	Threlkeld.....	38,200	1	1
Edmonds.....	227,600	1	1	Toner.....	126,600	1	1
Emery.....	366,900	1	1	Towers.....	188,500	1	1
Fillmore.....	165,900	1	1	Twining.....	245,800	1	1
Force.....	970,900	1	1	Tyler.....	206,100	1	1
Fort Reno.....	7,700	1	1	Van Buren.....	102,300	1	1
Franklin.....	398,600	1	1	Van Ness.....	83,400	1	1
French.....	169,500	1	1	Wallach.....	352,100	1	1
Gage.....	557,400	1	1	Webb.....	137,700	1	1
Garnett.....	318,400	1	1	Webster.....	150,500	1	1
Giddings.....	299,700	1	1	Weightman.....	120,100	1	1
Garrison.....	206,800	1	1	West.....	257,400	1	1
Grant.....	134,100	1	1	Western High.....	470,300	1	2
Greenleaf.....	122,000	1	1	Wheatley.....	168,800	1	1
Hamilton.....	2,300	1	1	Wilson.....	96,700	1	1
Harrison.....	106,600	1	1				
Hayes.....	292,500	1	1	Total.....	33,461,100	137	146
Henry.....	188,300	1	1				
Hilton.....	164,000	1	1	SCHOOL ANNEXES.			
Hubbard.....	129,300	1	1				
Hyde.....	289,600	1	1	822 8th St. NE.....	29,500	1	1
Jackson.....	199,200	1	1	642 Mass Ave. NE.....	3,200	1	1
Jefferson.....	354,500	1	2	624 O St. NW.....	400	1	1
Johnson.....	153,700	1	1	626 O St. NW.....	1,500	1	1
Jones.....	252,500	1	1	625 Q St. NW.....	7,000	1	1
Ketcham.....	388,500	1	1	1120 20th St. NW.....	47,800	1	1
Langdon.....	127,600	1	1	730 24th St. NW.....	3,900	1	1
Langston.....	126,100	1	1	1338 H St. NE.....	1,800	1	1
Lenox.....	174,700	1	1	11th St. bet. F & G NE.....	11,560	1	1
Lincoln.....	113,700	1	2				
Logan.....	166,000	1	1	Total.....	104,600	9	9
Lovejoy.....	243,400	1	1				

TABLE 6.—*Meters installed in various buildings owned and controlled by the District Government—Continued.*

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
<b>FIRE-ENGINE HOUSES, ETC.</b>				<b>PUBLIC CONVENIENCE STATIONS—Contd.</b>			
Engine houses:	<i>Cubic feet.</i>			Pennsylvania Ave., between 13th and 14th Sts. NW.	<i>Cubic feet.</i>		
No. 1.....	48,900	1	1	9th and K Sts. NW....	231,900	1	1
No. 2.....	431,900	1	1		957,800	1	1
No. 4.....	30,800	1	1	Total.....	1,927,300	3	3
No. 5.....	42,500	1	1				
No. 6.....	77,000	1	1	<b>STABLES.</b>			
No. 7.....	83,700	1	1	District of Columbia engineer department.....	143,600	1	2
No. 8.....	99,200	1	1	Parking commission.....	64,800	1	1
No. 9.....	54,900	1	1	Ambulance and Board of Charities.....	15,600	1	1
No. 10.....	58,300	1	1	Street-cleaning department.....	1,081,400	1	1
No. 11.....	40,800	1	1		399,800	1	1
No. 12.....	54,400	1	1	Total.....	1,704,600	5	6
No. 13.....	81,300	1	1	<b>WORKHOUSE GROUNDS</b>			
No. 14.....	214,700	1	1	Superintendent's house.....	32,400	1	1
No. 15.....	34,400	1	1	Wallingford house.....	31,900	1	1
No. 16.....	78,500	1	1	Wards 1, 2, 5, 6, and 7.....	255,400	1	1
No. 18.....	170,600	1	1	Receiving wards.....	379,900	1	1
No. 20.....	44,000	1	1	Nurses' home.....	54,200	1	1
No. 21 and 9 Truck	90,700	1	1	Pumping station and deadhouse.....	338,300	1	1
No. 22.....	92,000	1	1	Greenhouse.....	2,100	1	1
No. 23.....	81,500	1	1	Total.....	1,094,200	7	7
No. 24.....	120,200	1	1	<b>MISCELLANEOUS.</b>			
Truck houses:				Cement warehouse....	4,000	1	1
No. 1.....	104,000	1	1	Lodge house, Brightwood Reservoir....	28,100	1	1
No. 2.....	170,300	1	1	Market master's office	39,700	1	1
No. 3.....	122,400	1	1	Morgue.....	17,700	1	1
No. 4.....	27,700	1	1	Municipal lodging house.....	49,800	1	1
No. 5.....	50,700	1	1	Public drinking fountain.....	49,600	1	1
No. 6.....	38,500	1	1	Quarantine station....	193,400	1	1
No. 7.....	29,800	1	1	Sewer flush.....	20,800	1	1
No. 10.....	85,000	1	1		347,000	1	1
Chemical engine houses:				Municipal fish wharf..	318,000	1	1
No. 2.....	65,200	1	1		116,100	2	2
No. 3.....	49,800	1	1	Naval Battalion Wharf.....	8,800	1	1
No. 17.....	145,400	1	1	Rock Creek Park, superintendent's house.....	4,900	1	1
District of Columbia fire fighter (boat)...	126,400	1	1	Total.....	396,000	14	14
District of Columbia fire department stable.....	7,500	1	1	<b>RECAPITULATION.</b>			
Total.....	3,053,000	34	34	Schools and annexes..	33,565,100	137	146
<b>POLICE STATIONS.</b>				Fire-engine houses, etc.....	3,053,000	34	34
No. 1.....	228,300	1	1	Police stations.....	2,876,000	14	14
No. 2.....	207,600	1	1	Public playgrounds..	299,300	3	4
No. 3.....	349,200	1	1	Public convenience stations.....	1,927,300	3	3
No. 4.....	378,300	1	1	Stables.....	1,704,600	5	6
No. 5.....	110,500	1	1	Workhouse grounds..	1,094,200	7	7
No. 6.....	322,000	1	1	Miscellaneous.....	396,000	14	14
No. 7.....	648,700	1	1	Grand total....	44,916,100	218	229
No. 8.....	100,500	1	1				
No. 9.....	116,700	1	1				
No. 10.....	214,500	1	1				
No. 11.....	96,900	1	1				
Substation, Tenleytown, D. C.....	10,900	1	1				
Police-boat wharf.....	50,700	1	1				
House of Detention..	41,200	1	1				
Total.....	2,876,000	14	14				
<b>PUBLIC PLAYGROUNDS.</b>							
Columbia Heights....	18,900	1	1				
Georgetown.....	237,200	1	2				
Rosedale.....	43,200	1	1				
Total.....	299,300	3	4				
<b>PUBLIC CONVENIENCE STATIONS.</b>							
7th and Pennsylvania Ave. NW.....	737,600	1	1				

TABLE 6.—Meters installed in various buildings owned and controlled by the District government.

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
SCHOOLS.				SCHOOLS—continued.			
	<i>Cubic feet.</i>				<i>Cubic feet.</i>		
Abbott.....	94,300	1	1	Ludlow.....	279,600	1	1
Adams.....	190,000	1	1	M Street High.....	495,200	1	1
Addison.....	343,600	1	1	McCormick.....	33,800	1	1
Ambush.....	136,600	1	1	McKinley.....	1,054,400	1	1
Amidon.....	157,700	1	1	Madison.....	151,000	1	1
Armstrong.....	598,300	1	1	Magruder.....	163,100	1	1
Banneker.....	258,400	1	1	Manual Training No. 164.....	433,900	1	1
Bell.....	473,000	1	1	Maury.....	240,700	1	1
Berret.....	164,200	1	1	Military Road.....	52,100	1	1
Birney.....	189,200	1	1	Minor.....	243,100	1	1
Blair.....	267,000	1	1	Monroe.....	558,900	1	1
Blake.....	115,400	1	1	Montgomery.....	226,800	1	1
Blow.....	632,400	1	1	Morgan.....	587,700	1	1
Bowen.....	75,100	1	1	Morse.....	134,900	1	1
Bowen (S. J.).....	220,000	1	1	Mott (new).....	696,900	1	1
Bradley.....	165,700	1	1	Mott (old).....	27,900	1	2
Brent.....	211,700	1	1	Orr.....	92,800	1	1
Briggs.....	269,400	1	1	Patterson.....	491,100	1	1
Brightwood.....	82,400	1	1	Payne.....	218,800	1	1
Brightwood Park.....	107,500	1	1	Peabody.....	260,500	1	2
Brookland.....	88,300	1	2	Petworth.....	264,500	1	1
Bruce.....	172,300	1	1	Phelps.....	330,500	1	1
Bryan.....	182,000	1	1	Pierce.....	193,000	1	1
Buchanan.....	167,800	1	1	Polk.....	136,100	1	1
Business High.....	1,986,300	1	1	Potomac.....	231,300	1	1
Carberry.....	238,600	1	1	Powell.....	272,900	1	1
Chevy Chase and Annex.....	331,100	1	1	Randall.....	116,800	1	1
Cleveland.....	271,000	1	1	Reservoir.....	288,300	1	1
Congress Heights.....	175,100	1	1	Ross.....	311,700	1	1
Cook.....	138,200	1	1	Seaton.....	370,800	1	2
Henry D. Cooke.....	490,100	1	2	Simmons.....	435,500	1	1
Corcoran.....	208,100	1	1	Slater.....	294,600	1	1
Cordova.....	106,500	1	1	Smallwood.....	93,400	1	1
Cranch.....	89,300	1	2	Stevens.....	653,700	1	1
Crummell, Alex.....	226,900	1	1	Sumner.....	230,600	1	1
Curtis.....	124,100	1	1	Syphax.....	167,100	1	1
Denison.....	396,600	1	1	Takoma.....	94,800	1	1
Dent.....	324,000	1	1	Taylor.....	274,300	1	1
Douglass.....	604,200	1	1	Tenley.....	209,800	1	1
Eastern High.....	145,200	1	1	Thomson.....	245,900	1	1
Eaton.....	175,000	1	1	Threlkeld.....	38,200	1	1
Eckington.....	250,400	1	1	Toner.....	126,600	1	1
Edmonds.....	227,600	1	1	Towers.....	188,500	1	1
Emery.....	366,900	1	1	Twining.....	245,800	1	1
Fillmore.....	165,900	1	1	Tyler.....	206,100	1	1
Force.....	970,900	1	1	Van Buren.....	102,300	1	1
Fort Reno.....	7,700	1	1	Van Ness.....	83,400	1	1
Franklin.....	398,600	1	1	Wallach.....	352,100	1	1
French.....	169,500	1	1	Webb.....	137,700	1	1
Gage.....	557,400	1	1	Webster.....	150,500	1	1
Garnett.....	318,400	1	1	Weightman.....	120,100	1	1
Giddings.....	299,700	1	1	West.....	257,400	1	1
Garrison.....	206,800	1	1	Western High.....	470,300	1	2
Grant.....	134,100	1	1	Wheatley.....	168,800	1	1
Greenleaf.....	122,000	1	1	Wilson.....	96,700	1	1
Hamilton.....	2,300	1	1				
Harrison.....	106,600	1	1	Total.....	33,461,100	137	146
Hayes.....	292,500	1	1				
Henry.....	188,300	1	1	SCHOOL ANNEXES.			
Hilton.....	164,600	1	1	822 8th St. NE.....	29,500	1	1
Hubbard.....	129,300	1	1	642 Mass Ave. NE.....	3,200	1	1
Hyde.....	289,600	1	1	624 O St. NW.....	1,000	1	1
Jackson.....	199,200	1	1	626 O St. NW.....	7,000	1	1
Jefferson.....	354,500	1	2	625 Q St. NW.....	47,300	1	1
Johnson.....	153,700	1	1	1120 20th St. NW.....	3,800	1	1
Jones.....	252,500	1	1	730 24th St. NW.....	1,800	1	1
Ketcham.....	388,500	1	1	1338 H St. NE.....	11,500	1	1
Langdon.....	127,600	1	1	11th St. bet. F & G NE.....		1	1
Langston.....	126,100	1	1				
Lenox.....	174,700	1	1	Total.....	104,600	9	9
Lincoln.....	113,700	1	2				
Logan.....	166,000	1	1				
Lovejoy.....	243,400	1	1				



TABLE 6.—Meters installed in various buildings owned and controlled by the District Government—Continued.

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
<b>FIRE-ENGINE HOUSES, ETC.</b>				<b>PUBLIC CONVENIENCE STATIONS—Contd.</b>			
Engine houses:	<i>Cubic feet.</i>			Pennsylvania Ave., between 13th and 14th Sts. NW	<i>Cubic feet.</i>		
No. 1.....	48,900	1	1	9th and K Sts. NW...	231,900	1	1
No. 2.....	431,900	1	1		957,800	1	1
No. 4.....	30,800	1	1	Total.....	1,927,300	3	3
No. 5.....	42,500	1	1				
No. 6.....	77,000	1	1	<b>STABLES.</b>			
No. 7.....	83,700	1	1	District of Columbia engineer department.....	143,600	1	2
No. 8.....	99,200	1	1	Parking commission.....	64,800	1	1
No. 9.....	54,900	1	1	Ambulance and Board of Charities.....	15,600	1	1
No. 10.....	58,300	1	1	Street-cleaning department.....	1,081,400	1	1
No. 11.....	40,800	1	1		399,800	1	1
No. 12.....	54,400	1	1	Total.....	1,704,600	5	6
No. 13.....	81,300	1	1				
No. 14.....	214,700	1	1	<b>WORKHOUSE GROUNDS</b>			
No. 15.....	34,400	1	1	Superintendent's house.....	32,400	1	1
No. 16.....	78,500	1	1	Wallingford house.....	31,900	1	1
No. 18.....	170,600	1	1	Wards 1, 2, 5, 6, and 7.....	255,400	1	1
No. 20.....	44,000	1	1	Receiving wards.....	379,900	1	1
No. 21 and 9 Truck	90,700	1	1	Nurses' home.....	54,200	1	1
No. 22.....	92,000	1	1	Pumping station and deadhouse.....	338,300	1	1
No. 23.....	81,500	1	1	Greenhouse.....	2,100	1	1
No. 24.....	120,200	1	1	Total.....	1,094,200	7	7
Truck houses:				<b>MISCELLANEOUS.</b>			
No. 1.....	104,000	1	1	Cement warehouse...	4,000	1	1
No. 2.....	170,300	1	1	Lodge house, Brightwood Reservoir...	28,100	1	1
No. 3.....	122,400	1	1	Market master's office	39,700	1	1
No. 4.....	27,700	1	1	Morgue.....	17,700	1	1
No. 5.....	50,700	1	1	Municipal lodging house.....	49,800	1	1
No. 6.....	38,500	1	1	Public drinking fountain.....	49,600	1	1
No. 7.....	29,800	1	1	Quarantine station.....	193,400	1	1
No. 10.....	85,000	1	1	Sewer flush.....	20,800	1	1
Chemical engine houses:					347,000	1	1
No. 2.....	65,200	1	1	Municipal fish wharf..	318,000	1	1
No. 3.....	49,800	1	1		116,100	2	2
No. 17.....	145,400	1	1	Naval Battalion Wharf.....	8,800	1	1
District of Columbia fire fighter (boat)...	126,400	1	1	Rock Creek Park, superintendent's house.....	4,900	1	1
District of Columbia fire department stable	7,500	1	1	Total.....	396,000	14	14
Total.....	3,053,000	34	34	<b>RECAPITULATION.</b>			
<b>POLICE STATIONS.</b>				Schools and annexes..	33,565,100	137	146
No. 1.....	228,300	1	1	Fire-engine houses, etc.....	3,053,000	34	34
No. 2.....	207,600	1	1	Police stations.....	2,876,000	14	14
No. 3.....	349,200	1	1	Public playgrounds..	299,300	3	4
No. 4.....	378,300	1	1	Public convenience stations.....	1,927,300	3	3
No. 5.....	110,500	1	1	Stables.....	1,704,600	5	6
No. 6.....	322,000	1	1	Workhouse grounds..	1,094,200	7	7
No. 7.....	648,700	1	1	Miscellaneous.....	396,000	14	14
No. 8.....	100,500	1	1	Grand total....	44,916,100	218	229
No. 9.....	116,700	1	1				
No. 10.....	214,500	1	1				
No. 11.....	96,900	1	1				
Substation, Tenleytown, D. C.....	10,900	1	1				
Police-boat wharf.....	50,700	1	1				
House of Detention...	41,200	1	1				
Total.....	2,876,000	14	14				
<b>PUBLIC PLAYGROUNDS.</b>							
Columbia Heights....	18,900	1	1				
Georgetown.....	237,200	1	2				
Rosedale.....	43,200	1	1				
Total.....	299,300	3	4				
<b>PUBLIC CONVENIENCE STATIONS.</b>							
7th and Pennsylvania Ave. NW.....	737,600	1	1				

TABLE 7.—Premises which receive an allowance of free water.

Names.	Number.	Consumption (cubic feet).	Allowance (cubic feet).	Exceeded.	Paid.	Meters.
Churches.....	91	4,933,800	6,062,895	18	\$288.38	95
Orphan asylums.....	7	2,163,600	2,469,700	2	70.16	12
Hospitals.....	8	4,746,500	3,676,400	4	536.12	6
Homes.....	19	3,674,600	3,767,100	9	213.10	23
Schools.....	11	2,472,600	3,966,000	3	256.72	13
Neighborhood houses.....	3	113,400	1,375,800	1	.12	4
Total.....	139	18,104,500	21,317,895	37	1,364.60	155

Amount of water consumed.....	18,104,500
Amount of water used in excess of allowance.....	3,411,500
Total amount allowed free.....	14,693,000

Cubic feet.

TABLE 8.—Miscellaneous business establishments under meter, and amount of water consumed for the fiscal year 1912.

Miscellaneous business establishments.	7,500 cubic feet or less.		7,500 to 100,000 cubic feet.		100,000 to 1,000,000 cubic feet.		1,000,000 cubic feet and over.		Total premises of each class.
	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	
Abattoir.....					2	924,700			2
Apartments.....	8	31,400	458	16,771,700	329	48,961,700	9	14,209,500	804
Art gallery.....					1	313,000			1
Bakeries.....			21	774,600	12	3,928,900			33
Ball ground.....					1	184,700			1
Banks.....	1	5,500	1	28,000	4	516,200			6
Barber shops.....			6	121,900					6
Bottling works.....	2	6,900	6	250,800	9	3,650,600			17
Bowling alleys.....			1	19,600	1	135,300			2
Breweries.....			1	435,800	1	751,700	4	6,765,100	6
Cemeteries.....	2	9,300	7	366,800	2	487,100			11
Clubhouses.....	2	4,000	18	551,600	8	1,485,000	3	7,833,300	31
Coal yards.....	4	18,300	11	279,600	2	555,500			17
Dairies.....	1	36,900	1	35,800	12	6,641,500			14
Department stores.....	2	800	3	140,600	4	2,099,600	3	7,871,500	12
Drug stores.....	1	4,500	10	450,300	7	1,124,900			18
Dye works.....	1	2,100	11	486,000	3	464,700			15
Florists.....			11	493,300	8	2,098,900			19
Garages.....	5	20,900	12	869,500	10	2,985,400	1	1,522,400	28
Gas works.....			1	14,500	4	1,703,700	2	2,688,500	7
Halls.....	1	5,800	9	298,100	3	1,320,800			13
Homes.....			5	178,400	2	352,100			7
Hospitals.....					1	126,800			1
Hotels.....	1	1,600	33	2,137,700	41	14,378,800	9	44,017,400	84
Ice yards and plants.....			2	979,400	2	771,200	8	88,589,600	12
Laundries.....			3	137,400	16	8,749,200	8	17,256,400	27
Lumber and saw mills.....			9	273,400	4	925,500			13
Lunch rooms.....			25	1,465,800	12	2,054,300			37
Machine shops.....	1	5,400	13	571,400	1	116,700			15
Markets.....	1	6,100	13	165,000	4	571,400	1	10,992,900	19
Miscellaneous.....	8	12,200	33	864,000	68	3,030,600			109
Office buildings.....	10	49,700	133	5,640,600	85	18,946,900	10	14,284,300	238
Pool rooms.....			2	114,100	1	227,600			3
Printing offices.....			13	738,800	10	2,603,600			23
Race track.....			1	19,600					1
Railroads, offices and yards.....	2	7,300	4	136,400	5	1,787,700	3	127,589,900	14
Saloons and restaurants.....	5	23,700	327	17,192,900	77	10,367,300			409
Schools and seminaries.....	3	10,900	28	1,300,000	19	4,567,000	2	3,842,700	52
Scientific institutes.....	1	1,700	2	100,500	1	428,700			4
Small manufactories.....	4	11,200	43	1,841,600	23	5,387,300	5	11,519,400	75
Stables.....	13	58,300	84	3,503,500	21	4,712,900			118

TABLE 8.—Miscellaneous business establishments under meter, and amount of water consumed for the fiscal year 1912—Continued.

Miscellaneous business establishments.	7,500 cubic feet or less.		7,500 to 100,000 cubic feet.		100,000 to 1,000,000 cubic feet.		1,000,000 cubic feet and over.		Total premises of each class.
	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	
Steamboat offices and wharves.....			4	175,400	3	1,662,400			7
Stone yards.....	1	2,800	3	111,500	2	293,500			6
Stores (miscellaneous).....	33	123,600	145	5,222,900	32	6,048,000			210
Street railway stations and power plants.....	6	28,400	4	135,900	15	5,199,700	2	2,705,600	27
Telephone and telegraph exchange.....					1	431,100			1
Theaters.....	1	4,100	9	251,600	12	3,204,200	1	3,294,500	23
Turkish baths.....			1	34,400	1	189,400			2
Undertakers.....	1	7,200	3	120,800	1	133,700			5
Warehouses.....	4	20,200	17	592,900	5	1,145,300	1	1,483,700	27
Fire services.....							35	550,300	35
Private residences (private meters).....	29	90,400	204	4,909,700	20	3,416,000	1	1,848,800	254
Vacant, no consumption.....									21
Total.....	154	611,200	1,751	71,304,800	908	182,162,800	108	368,865,800	2,942

Total number of cubic feet consumed ..... 622,944,600  
 Total value ..... \$257,719.99  
 Average payment ..... \$82.16

NOTE.—While this quantity of water was consumed during the fiscal year, the last quarterly payment goes into the revenue for the next fiscal year.

TABLE 9.—General information.

Taps inserted in water mains:	
For new services.....	2,143
Water department, general.....	183
New services.....	2,014
Services abandoned.....	1,160
Water services, total to date.....	65,732
Services metered.....	33,784
Percentage of services metered.....	51

Meters in service.	In use June 30, 1912.	Installed 1913.	Abandoned 1913.	Total.
District meters in private residences.....	20,311	9,978	69	30,220
District meters in municipal buildings.....	227	4	1	230
Private meters.....	2,930	156	35	3,061
Private meters in charitable institutions.....	143	12		155
Total in use June 30, 1913.....	23,611	10,150	105	33,656

Average cost of installing a water meter by the department.....	\$10.98
Average cost of repairs to meters.....	.33
Average cost of reading meters.....	.12
Average cost of computing meter accounts and making bills.....	.12
Average payment for premises in which meters were installed by the department.....	5.35
Average payment for premises in which private meters were installed.....	\$2.16

REVENUE.

Revenue for metered water:	
District of Columbia meters.....	\$111,176.65
Private meters.....	241,719.99
Total revenue for metered water.....	352,896.64
Total revenue for flat-rate accounts.....	283,058.02
Total revenue for meter and flat-rate accounts.....	635,954.66

## REPORT OF THE SUPERINTENDENT OF SEWERS.

WASHINGTON, D. C., *September 29, 1913.*

SIR: I have the honor to submit the following report of the sewer division, engineer department, District of Columbia, for the fiscal year ending June 30, 1913:

DIVISION A.—*Drainage studies, plans, engineering data.*

Drainage studies for extensions and for future development of the sewerage system included during the year the sanitary sewerage for the upper Potomac areas, the upper valley of Falls Branch, the upper valley of Broad Branch, upper Rock Creek areas on both sides of the valley, Piney Branch valley east of Georgia Avenue, North Brookland, Kenilworth, and Bannings, also the combined system of sewerage in the upper Potomac, Rock Creek, Piney Branch, and the Anacostia River valleys.

Plans for the sewerage system were in preparation on a number of large drainage works along the Anacostia River as far as Massachusetts Avenue, required in connection with the Anacostia River improvement. Sections of the Piney Branch, Luzon Valley, and Bunker Hill Road trunk sewers were planned and built, designs for new outlet for the College Pond and northeast boundary trunk sewers completed, as well as plans for various relief storm sewers, the most important being the Maryland Avenue storm-water diversion, construction on which was begun near the close of the year.

Plans for the sewage-disposal system included new sections of the Rock Creek main interceptor as far northward as Pierce's Mill; the Anacostia main interceptor to Massachusetts Avenue; also detail plans for the Poplar Point pumping station and its equipment. Progress was made on studies for the upper Potomac interceptor, the upper Anacostia interceptor, which includes the Bannings substation; also for a special plant for preliminary treatment of the sewage from the United States asylum for the insane. This institution is now discharging 400,000 gallons of raw sewage per day without screening or sedimentation practically direct to the Potomac River, thus creating such visibly objectionable conditions as to require remedy.

The engineering data for the year included rainfall and run-off record and river flow; also determination of dissolved oxygen, examinations of the river bottom in the Potomac for many miles below the sewage outfall for evidence of sludge deposits, and the bacteriological examination of streams entering the District to ascertain the degree of their pollution by Maryland towns.

The United States Public Health Service began during the year a sanitary survey of the Potomac. For the section of the river adjacent to Washington, extending as far as Mount Vernon, water transportation for this survey has been provided by the sewer department. As this survey will be continued during the next fiscal year and will include daily oxygen determinations on an extensive scale, the regular triweekly oxygen determinations of the department were temporarily suspended at the close of the year to avoid expenditure for duplicate work.

## RAINFALL AND RUN-OFF.

In connection with run-off studies the rainfall record was secured throughout the year at 3 automatic recording and 21 ordinary gauges distributed over 50 square miles of area. From data thus obtained quantitative contours of precipitation are mapped with a view of determining the actual relation of this function in the run-off formula, and from a study of this data it already appears possible that the empirical assumption so long in use by drainage engineers will be found considerably in error so far as the smaller areas which are drained by closed channels are concerned. The intensity studies are now restricted to data from three automatic stations from 2 to 4 miles apart, and the wide variation in the time, intensity, and volume of precipitation as recorded for identical storms at these stations indicates the need of intermediate gauges. The thorough study of this subject is of vital importance not only for determining adequate size of conduits for storm-water discharge, but to avoid unnecessary expenditure for undue sizes in these constructions, which are necessarily very costly.

The rainfall record of the year is remarkable for two storms, both occurring in the summer of 1912, one of which, July 14, 1912, exceeded in intensity all previous records. In this storm the contour of maximum rate included but one automatic station, No. 3, while station No. 1 was fully 1 mile outside the maximum rate contour. As would be expected with such a precipitation (more than 3 inches within 30 minutes) all sewers but one within the maximum rate area were heavily surcharged, many running under heads of from 5 to 15 feet. The one exception was the great northeast boundary sewer, 22 feet in diameter, which was designed to provide adequate drain-

age when running half full,<sup>1</sup> and which was charged in this storm to 85 per cent of its capacity. These automatic gauges are located in separate drainage areas and the records accord with observations of run-off in the trunk lines within the several areas, as well as with the records as to flooding of cellars and basements. In the drainage area of gauge No. 1 there was less surcharge of sewers and flooding except in a special instance due to spill-over from higher levels into a pocketed area, while for 2 miles westward from gauge No. 3 all lines were heavily surcharged, and there were hundreds of cases of flooding, yet the provision for storm water is most liberal throughout this section, the main outlet of which, as stated, was designed to care for all drainage when running half full. These storms of exceptional intensity are recorded below:

*Rainfall of July 14, 1912 (began 6.05 p. m.).*

[Depth of precipitation (in inches) at time indicated.]

Gauge.	6.05	6.10	6.15	6.20	6.25	6.30	6.35	6.40	6.45	6.50
No. 1.....	0	0.14	0.42	0.78	1.22	1.66	2.00	2.28	2.45	2.54
No. 2.....	0	.01	.05	.20	.50	.85	1.30	1.60	1.90	2.00
No. 3.....	0	.05	.47	1.17	1.67	2.67	3.07	3.25	3.35	3.42

MAXIMUM RATE.

[Rate of precipitation (in inches per hour) during periods of time indicated.]

Gauge.	5 minutes.	10 minutes.	15 minutes.	20 minutes.	25 minutes.	30 minutes.
No. 1.....	3.36	3.84	4.32	4.56	4.46	4.28
No. 2.....	3.60	3.90	4.40	4.20	4.08	3.60
No. 3.....	5.04	6.72	6.48	7.86	7.25	6.40

MAXIMUM PRECIPITATION.

[Depth of precipitation (in inches) during periods of time indicated.]

No. 1.....	0.28	0.64	1.08	1.52	1.86	2.14
No. 2.....	.30	.65	1.10	1.40	1.70	1.80
No. 3.....	.42	1.12	1.62	2.62	3.02	3.20

*Rainfall of Sept. 7, 1912 (began 7.30 p. m.).*

[Depth of precipitation (in inches) at time indicated.]

Gauge.	7.30	7.35	7.40	7.45	7.50	7.55	8.00	8.05	8.10	8.15	8.20	8.25	8.30
No. 1...	0	0.01	0.13	0.36	0.75	1.16	1.33	1.43	1.53	1.60	1.61	1.62	1.63
No. 2...	0	.00	.00	.25	.43	.65	.85	1.07	1.25	1.45	1.65	1.70	1.80
No. 3...	0	.05	.39	.55	.90	1.15	1.32	1.50	1.70	1.85	2.00	2.25	2.34

MAXIMUM RATE.

[Rate of precipitation (in inches per hour) during periods of time indicated.]

Gauge.	5 min-utes.	10 min-utes.	15 min-utes.	20 min-utes.	25 min-utes.	30 min-utes.	35 min-utes.	40 min-utes.	45 min-utes.	50 min-utes.
No. 1.....	2.76	3.72	4.12	3.60	.....	.....	.....	.....	.....	.....
No. 2.....	3.00	2.58	2.60	2.55	2.57	2.50	2.49	2.48	.....	.....
No. 3.....	4.08	3.00	3.40	3.30	3.05	2.90	2.83	2.70	2.60	2.64

<sup>1</sup> Hoxie on excessive rainfall (Trans. Am. Soc. C. E., vol. 25, p. 70, July, 1880).

*Rainfall of Sept. 7, 1912 (began 7.30 p. m.)—Continued.*

## MAXIMUM PRECIPITATION.

Depth of precipitation (in inches) during periods of time indicated.]

No. 1.....	0.23	0.62	1.03	1.20	.....	.....	.....	.....	.....	.....
No. 2.....	.25	.43	.65	.85	1.07	1.25	1.45	1.65	.....	.....
No. 3.....	.34	.50	.85	1.10	1.27	1.45	1.65	1.80	1.95	2.20

NOTE.—No. 1, Weather Bureau; No. 2, Sewerage Pumping Station; No. 3, boundary sewer gatehouse. Distance from Weather Bureau to boundary sewer gatehouse, 4 miles; distance from Weather Bureau to Sewerage Pumping Station, 3½ miles; distance from boundary sewer gatehouse to Sewerage Pumping Station, 2 miles.

The precipitation, by months, for the fiscal year was recorded as follows:

	1912.	Inches.		1913.	Inches.
July.....		7.21	January.....		2.85
August.....		1.50	February.....		1.37
September.....		5.86	March.....		4.67
October.....		.65	April.....		5.86
November.....		1.54	May.....		4.55
December.....		4.12	June.....		1.81
			Total.....		41.39

## RIVER FLOW AND SEWAGE DILUTION.

The sewage-disposal-system outfall at Grimes, on the Potomac River, was under constant observation during the year, and the general condition of the waters in the vicinity of the outfall continued excellent under all conditions of tides and river flow. Examinations of the river bottom and the beaches show no evidence of sludge or deposits, and the surface is substantially free from oil or sleek at all times. The oxygen tests tabulated indicate the very good condition of the river water at the outfall. The excellent fishing grounds in this immediate vicinity, where perch and rockfish during the year were caught in abundance, corroborate the results of these observations.

Plans are now being prepared for a number of minor betterments to further reduce the quantity of oils and materials in suspension by improvements in screening and skimming, and a special plant is being designed for treating the sewage from the United States asylum for the insane.

The following is a tabulation of the flow of the Potomac River for each month of the year, together with the average discharge through the outfall, which includes considerable storm water, ground water, stream flow from suburban areas, and all wastes of the water-supply system, and its ratio to the river flow, as well as the effective ratio of dilution obtained:

*River flow and sewage dilution.*

Months.	River discharge (second-feet).			Average pumpage (second- feet).	Ratio to river flow.	Effective dilution.
	Maximum.	Minimum.	Mean.			
1912.						
July .....	58,000	4,825	10,656	92	1:116	234:1
August.....	9,950	2,812	4,505	102	1:47	19:1
September.....	49,000	2,175	8,406	114	1:74	185:1
October.....	8,650	2,812	4,028	95	1:45	88:1
November.....	9,688	2,812	4,254	91	1:46	93:1
December.....	10,755	2,812	4,446	94	1:47	98:1
1913.						
January.....	36,750	8,150	14,984	91	1:164	329:1
February.....	10,775	4,625	7,742	93	1:83	171:1
March.....	148,750	4,238	23,409	100	1:234	515:1
April.....	79,750	10,225	20,843	113	1:187	459:1
May.....	84,000	5,012	17,611	106	1:161	387:1
June.....	64,500	4,050	13,700	106	1:129	301:1

Oxygen determinations of the condition of the river within the dilution basin were made throughout the year, as well as similar determinations of samples taken in upper river for comparison. The following table gives the maximum, minimum, and mean results of oxygen tests for each month of the year:

*Comparison of oxygen tests of samples of river water taken near sewage outfall and from the upper Potomac River for the fiscal year 1913.*

Month.	Average river flow.	Oxygen, per cent of saturation.					
		Maximum.		Minimum.		Mean.	
		Dilution basin.	Upper river.	Dilution basin.	Upper river.	Dilution basin.	Upper river.
	<i>Sec.-ft.</i>						
July.....	10,656	100	100	70	71	83	93
August.....	4,505	92	100	50	77	76	88
September.....	8,406	92	94	51	66	70	81
October.....	4,028	93	99	71	77	78	87
November.....	4,254	92	98	61	80	82	91
December.....	4,446	92	98	82	87	88	93
January.....	14,984	100	100	80	81	94	96
February.....	7,742	99	99	89	91	96	97
March.....	23,409	100	100	86	91	94	97
April.....	20,843	100	100	89	93	94	98
May.....	17,611	99	100	70	83	84	91
June.....	13,700	97	99	51	74	78	86

During the past 12 months the river flow has exceeded 2,000 second-feet every day, and has exceeded 2,500 second-feet each day except for one period of two days. The minimum flow was 2,175 and maximum 148,000 second-feet.

#### SANITARY SURVEY OF THE POTOMAC RIVER.

In connection with the portion of this report for the last fiscal year that referred to "Sewage disposal and the shell-fish industry," it is proper to record the beginning of the survey of the Potomac River by the United States Public Health Service. This work was begun June 2, 1913, and it is understood will be carried on at least throughout the next fiscal year. Data of great value, particularly in determining the question of self-purification of river waters are anticipated, as well as such an authoritative analysis of local conditions in the Potomac as will indicate future procedure in dealing with the important problems of sewage purification.

#### METROPOLITAN SEWERAGE SYSTEM.

Work was continued during the year on a study of the condition of the streams flowing into and through the District as to the extent of their present pollution by the discharge of sewage therein from neighboring Maryland towns. As these comparatively small streams flow for miles through the great public parks, the prevention of their serious pollution is necessary. Within the District sewage is not permitted to enter these streams, but this result, obtained by constructing costly lines of sewage interceptors, will be largely nullified if the discharge of sewage from exterior sources is permitted to continue. The pollution of these streams is now very apparent and is steadily increasing. One or two are little better than open sewers, actually carrying a larger amount of filth than is carried by some of the suburban combined system sewers within the District. Hardly less than 10 years must elapse, even with immediate efforts directed thereto, before this condition can be adequately remedied. With the constant growth of population immediately outside of the District, the subject is one of increasing importance. The Maryland State Board of Health is understood to be preparing a report on these conditions and their remedy, which is to be submitted to the State legislature meeting in January, 1914, under the provisions of the act passed by the legislature in 1912.

In advance of action by the State of Maryland on this subject no definite recommendation can be made toward abating these conditions, which, it is believed, within

a comparatively short period will constitute a nuisance. But attention is invited to the following abstract from my report for the fiscal year 1909:

"The only practical solution of this problem is believed to be in the formation of a metropolitan district under the control of a State and national board, with power to construct the necessary valley interceptors for the removal of the sewage, and that these interceptors be arranged so as to discharge at the State line into the interceptors of the sewage-disposal system of the District of Columbia, the District to be reimbursed for the cost of pumping and handling of the sewage from the Maryland towns and villages by State-collected tax levied upon the communities benefited, which should also defray the cost of construction and maintenance of the State system.

"The present conditions are not such as to render this a matter of immediate urgency, but the population in these areas is quite rapidly increasing, so that for a subject so complicated, especially in the matter of jurisdiction and legislation, which will require a number of years to develop, it is believed not too soon to begin the study of the problem. The interests of the District are so immediate and the conservation of the purity of these streams so important for the protection of the park systems, and in the interest of the public health and sanitation, that it is respectfully recommended that a board be appointed to work in conjunction with such officials of the State of Maryland as may be designated for tentative consideration of the subject as soon as the necessary authority may be obtained."

A number of conferences have been held with officials of the State board of health having charge of this subject, which have resulted in the action of the legislature referred to above. The following is abstracted from the report of the Bureau of Sanitary Engineering, State Board of Health of Maryland, December, 1912:

"These counties (Montgomery and Prince George) include that portion of Maryland contiguous to the District of Columbia. This section is being rapidly developed, and numerous communities close to the District are fast building up. The question of proper sanitation seems to have received but little attention until lately, and relief from objectionable drainage conditions is urgent.

"The proper disposition of the sewage from the numerous communities is a matter yet to be decided upon. There are two courses open. One is connection to the sewers of the District of Columbia system, which would have to be extended to the District line, and the other is the construction of separate disposal plants just outside the District line for each drainage area.

"There are three principal drainage areas lying contiguous to the District and needing sewerage facilities at present. On the northeast boundary is the Anacostia River area, which is the largest of the three; at the northerly corner the drainage area of Rock Creek enters the District; and just to the west is the Little Falls Branch area.

"In the Anacostia River area, which lies in both counties, one trunk line will begin at or near Branchville and follow the stream down through Lakeland, College Park, Riverdale, Hyattsville, and Bladensburg to the District line, where either connection will be made with a District sewer or a disposal plant constructed. A branch is to commence near Sligo, take in the laterals from Silver Spring, North Takoma, and Takoma, and pass thence southerly along northwest branch through Mount Rainier, Brentwood, and Hyattsville, to a junction with the main sewer.

"In the Rock Creek area, which is entirely in Montgomery County, the main trunk sewer will probably have its origin at Garrett Park and follow the stream down to the District line, collecting on the way laterals from the west from a portion of Bethesda and other developments in its vicinity, and the northern portion of Chevy Chase; and from the east, laterals from Kensington, Forest Glen, and Linden. The main sewer will be either connected to a District sewer or to a disposal plant near the District line.

"Little Falls Branch, which is also entirely in Montgomery County, drains part of Bethesda and Bradley Hills, Edgewood, the southwestern portion of Chevy Chase, Somerset, Friendship Heights, and other smaller localities. A trunk line is to start at Chevy Chase and another south of Friendship Heights. These are to join together and will follow the main stream down to a point near the Delacarla receiving reservoir of the District watersystem; there it will be either connected to a District sewer or to a disposal plant to be located in the vicinity. A branch will commence near Bethesda and another in Edgewood, the two uniting near Willets Brook and following it to its junction with Little Falls Branch, where a connection will be made to the main sewer.

"Little Falls Branch receives a considerable amount of sewage from Somerset, Friendship Heights, The Hills, Drummond, and Chevy Chase. These districts lie upon either the main stream or its branches, and make use of the near-by watercourses for the disposal of sewage, in most cases without preliminary treatment, although



Chevy Chase is provided with a sewage irrigation field which receives very irregular attention. This has resulted in a most objectionable condition in the stream, and at times it is nothing more than an open sewer. The attention of the State Board of health has been directed to this nuisance, and the matter was reported upon during the present year. The best plan for permanent relief is the construction of a main trunk sewer in the Little Falls valley. If steps are not taken so this can be brought about in 1914, conditions are such that the State board of health will be compelled to take summary action."

The following is a tabulation of the results of bacteriological examination of samples taken at or near the District line from streams entering the District, and indicates very clearly the serious pollution of several of these streams by sewage from Maryland towns:

*Results indicated by bacteriological examination of samples taken from streams entering the District, showing extent of pollution of these streams by Maryland towns.*

[Also for comparison similar results are given from samples taken in the Potomac River above the city, in the dilution basin, near the sewage-disposal system outfall, in the sewage conduit at the pumping station, and in suburban sewers of the sewerage system.]

Where taken.	Number colonies per c. c. on agar at 37° C., 24 hours.	Number B coli <sup>1</sup> per c. c.
Rock Creek near District line.....	48,000	1
Anacostia River near District line.....	32,000	100
Sligo Branch.....	65,000	10
Chevy Chase Branch.....	21,000	100
Little Falls Branch.....	120,000	10,000
Potomac River at Three Sisters.....	2,550	0.11
Potomac River at sewage outfall.....	5,130	0.1
Suburban sewers, sewerage system.....	46,000	0.01

<sup>1</sup> B. coli test made in lactose bouillon at 37° C., 48 hours, and confirmed by subsequent cultures.

#### DIVISION B.—Operation and maintenance, sewerage system.

The operating work for the fiscal year included the flushing of 1,270 miles of sewers, the cleaning of 24.3 miles of sewers, the cleaning of 40,244 catchment basins, the removal of 239,163 cubic feet of material from sewers and basins, and of 869,640 pounds of material from the sewage screens.

The maintenance work of the year included the inspection of the interior of 131.2 miles of main sewers and the inspection of 1,270 miles of pipe sewers. Many repairs were made throughout the system and both main and pipe sewers maintained in excellent condition throughout the year. The great storm of July 14, 1912, when more than 3 inches of rain fell within 30 minutes, heavily damaged portions of the drainage system, destroying part of the outlet channel of the northeast boundary sewer and bursting a section of the Nineteenth Street NE. trunk sewer. With exception of the boundary-sewer outlet, all damage due to this storm was repaired during the year.

There were no cases of obstructed trunk sewers, eight cases of minor obstruction of pipe sewers, one of which was due to root intrusion from shade trees, one due to work of plumber making connection with public sewer, five due to crushing of very old pipe sewers, and one, at the Union Railroad Station, to the driving of a foundation pile on street railway construction directly through the sewer, which was 30 feet below the new street grade under the heavy fill at this point. The District was reimbursed for the cost of repairs to the latter by the street railway companies.

The cleaning of catchment basins was placed on a more efficient basis during the year, so that with an increase of 5 per cent in the volume of work over the preceding year the actual cost of the work was reduced 10 per cent. Owing, however, to the necessary and desirable change in the disposal of the material from these catchment basins, involving its removal by scows from the city in place of dumping, as heretofore, within the city limits, the increased equipment and cost of handling requires a greater expenditure than heretofore. Aside from its physical necessity, the benefit from this improved disposal is believed to amply justify on sanitary grounds the increased expenditure.

The following tabulation shows that the total length of sewers has increased 319 miles, more than 100 per cent, in 20 years, while the maintenance appropriation has not materially increased:

Year.	Length of sewers.	Appro- priation for main- tenance.	Cost of main- tenance per mile.	Year.	Length of sewers.	Appro- priation for main- tenance.	Cost of main- tenance per mile.
	<i>Miles.</i>				<i>Miles.</i>		
1894.....	325.07	\$45,000	\$138.43	1904.....	456.87	\$58,000	\$126.95
1895.....	338.30	45,000	133.02	1905.....	468.86	58,000	123.70
1896.....	351.55	45,000	128.00	1906.....	484.40	42,000	86.70
1897.....	369.04	50,000	135.49	1907.....	501.44	138,000	75.78
1898.....	382.78	50,000	130.62	1908.....	521.18	144,500	85.38
1899.....	394.92	50,000	126.61	1909.....	542.03	145,000	83.02
1900.....	408.09	50,000	122.52	1910.....	567.98	148,500	85.39
1901.....	421.34	50,000	118.67	1911.....	589.74	150,000	84.70
1902.....	436.89	50,000	132.76	1912.....	618.53	150,000	80.84
1903.....	448.09	58,000	129.44	1913.....	644.28	150,000	77.61

<sup>1</sup> Exclusive of sewage-disposal maintenance.

There are now 644.28 miles of sewers and 5,173 catchment basins maintained. This maintenance includes the repairing, cleaning, flushing, and inspection of these works. An accurate and detail daily record of all work performed, with complete cost keeping by card system, is maintained.

The following is a summary of the work of this division for the fiscal year:

**Cleaning:**

Main sewer cleaned.....	feet.....	4,525
Pipe sewers cleaned.....	do.....	123,545
Pipe sewers flushed.....	do.....	6,705,367
Manholes flushed.....	number.....	18,594
Pumps, regulators, and gates cleaned and inspected.....	do.....	3,949
Storm-water receiving basins flushed.....	do.....	18,416
Basins cleaned.....	do.....	40,244
Basin outlets cleaned.....	do.....	81
Sludge removed—		
Pipe sewers.....	cubic feet.....	3,723
Storm-water receiving basins.....	do.....	168,696
Sediment chamber, sewerage pumping station.....	do.....	66,744
Screens, sewerage pumping station.....	pounds.....	869,640

**Inspection and repairs:**

**Main sewers—**

Main sewers inspected.....	miles.....	130.90
House connections inspected and repaired.....	number.....	127
Special large connections.....	do.....	27

**Pipe sewers—**

Pipe sewers inspected.....	miles.....	1,270
Pipe sewers relaid, including basin connection.....	feet.....	405
Pipe sewers abandoned.....	do.....	788
Settlements refilled.....	number.....	26
Manholes reconstructed.....	do.....	12
Manholes adjusted and repaired.....	do.....	48
Manholes abandoned.....	do.....	10
Manhole frames replaced.....	do.....	42
Manhole covers replaced.....	do.....	106

**Basins—**

Reconstructed.....	do.....	4
Repaired.....	do.....	87
Abandoned.....	do.....	8
Alley grates replaced.....	do.....	14
Alley frames replaced.....	do.....	12

Cost:

## Cleaning and inspection—

Inspecting main sewers.....	\$1, 285. 63
Inspecting and flushing pipe sewers.....	3, 219. 03
Cleaning main sewers.....	1, 318. 42
Cleaning pipe sewers.....	3, 718. 08
Cleaning catch basins.....	14, 736. 40
Cleaning and inspecting sumps, gates, and regulators.....	1, 097. 00
Flushing catch basins.....	1, 329. 74

## Repairing—

Main sewers.....	3, 642. 89
Pipe sewers and basin connections.....	1, 190. 36
Abandoning pipe sewers.....	66. 57
Filling settlements over sewers.....	142. 07
Reconstructing basins.....	213. 64
Repairing and adjusting basins.....	734. 74
Abandoning basins.....	26. 87
Replacing basin grates and frames.....	154. 49
Reconstructing manholes.....	755. 84
Adjusting and repairing manholes.....	251. 63
Abandoning manholes.....	65. 11
Replacing manhole frames and covers.....	399. 50
Miscellaneous repairs.....	121. 64
Miscellaneous work.....	2, 203. 75

## DIVISION C.—Operation and maintenance, sewerage pumping stations, and yards and shops.

Under this division is included the operation and maintenance of the main sewerage pumping station, also of substations, gates, and regulators, and all mechanical equipment of the sewer division, the management of shops, stores, yards, and floating equipment, as well as the installation of mechanical apparatus, and all special construction.

*Sewerage pumping service.*—There were 23,518 million gallons of sewage and 839.8 million gallons of storm water pumped during the year. The pumping plant was operated without interruption of service and received the sewage from practically the entire District, delivering same to the outfall. The fixed hydraulic levels were constantly maintained on all classes of pumps.

The following is a tabulation of the quantities for each month:

Table showing total pumpage for each month of fiscal year.

Month.	Sewage.	Storm water.	Month.	Sewage.	Storm water.
1912.			1913.		
July.....	1, 849, 547, 000	144, 200, 000	January.....	1, 807, 758, 000	57, 000, 000
August.....	2, 044, 277, 000	30, 000, 000	February.....	1, 678, 190, 000	27, 400, 000
September.....	2, 224, 592, 000	117, 200, 000	March.....	1, 996, 237, 000	93, 400, 000
October.....	1, 892, 913, 000	13, 000, 000	April.....	2, 199, 278, 000	117, 200, 000
November.....	1, 762, 834, 000	30, 800, 000	May.....	2, 116, 536, 000	91, 000, 000
December.....	1, 882, 278, 000	82, 400, 000	June.....	2, 063, 975, 000	36, 200, 000

Nine million, three hundred and three thousand, six hundred and eighty-four pounds of coal were consumed, and there were used 1,638 gallons of cylinder oil, 1,489 gallons of engine oil, 374 gallons of miscellaneous oils, and 785 pounds engine grease; 2,494 gallons illuminating oil and 9,091 gallons gasoline were consumed, the two latter including all usage of the department during the year; 2,259 pounds of cotton waste were used and 1,090 pounds of waste were washed and reused.

The following are the principal items of betterment and repair for the year:

*Pumping plant.*—Among the minor improvements and repairs in connection with the pumping machinery were the installation of force-feed oil pumps on stoker engines Nos. 1 and 2, and on the boiler feed pump, and the renewal of oil ring in thrust bearing of engine No. 1, Class I. Rocker arms on Nos. 4 and 8 pumping engines of Class III were replaced during the year.

*Station repairs and betterment.*—The construction of the settling basin on river main intake furnishing water to the condensers was completed during the year at cost of \$321.21. Four automatic recording electric level indicators were constructed during the year at a cost of \$433.50 each. These level indicators complete the necessary equipment for the control of the automatic substation at Poplar Point. The installation of the lighting fixtures for the Sewerage Pumping Station yard was completed. As an additional safeguard against the interruption of the low level sewage pumping service, permission was obtained during the year from the Navy Department for the installation of a special breakdown electric power cable between the pumping station and the electric power plant at the navy yard, and the necessary power cables were laid in underground conduit, cost \$661.66. This service provides for the transmission of 100 electrical horsepower and is reciprocal. It will deliver current from the navy yard for pumping in case the steam plant is temporarily completely disabled, and deliver current to the navy yard from the pumping station generating plant in similar emergency. The necessary electric pumping units for this installation were ordered and the plans for the installation completed.

*Substation work.*—The construction of the Poplar Point substation was begun near the close of the year, contract was let for the hydraulic sluice gates, and plans completed for the remainder of the equipment.

*Stores.*—All tools and miscellaneous supplies purchased for the sewer department were received, inspected, and issued at storeroom and yards, accurate records being kept on the card system by the storekeeper and quarterly reports made covering all unexpendable property. An inventory of all property was taken at the close of the fiscal year in order to verify accounts and close records. All unserviceable property was returned to the purchasing officer for condemnation and sale.

*Yard.*—The work on the sewer department yard at the foot of First Street SE. was completed during the year, and included the erection of concrete and wire inclosing fence, iron gates, grading and roadways, blacksmith shops, cement shed, cable shed, wagon shed, platform scale and scale house, electric power cables, electric derrick, and water main. The following special concrete work was made at the yard during the year: 173 side basin tops, 86 corner basin tops, 272 special basin tops, 140 cheek blocks, 144 drip stones, and 1,542 linear feet of concrete semicircular pipe, 24-inch diameter.

*Floating equipment.*—During the year the floating equipment was employed in conveying materials removed from the sediment chamber and ashes from the sewerage pumping station to points of disposal, in conveying construction materials to points along the water front where sewer work was in progress, in transportation of chemists in taking samples for oxygen determinations, dredging in front of sewer outlets and for dredging on sewer construction, transportation of inspectors, assistant engineers, etc. Scows 1, 2, 4, and 5 were repaired with new decks, calking, and painting. One scow 22 by 48 feet was constructed, at a cost of \$2,056.15, and two work boats costing \$82.68. The tow boat *Virginia* was overhauled, hull cleaned, and painted.

*Shops.*—In addition to work in connection with construction and repairs enumerated in preceding paragraphs of this division, work of the shops included all repairs to pumping and other machinery, cleaning wagons, motor trucks, and construction equipment, minor repairs for maintenance and betterment of building, and maintenance of electric lighting and power circuits. Forms were made for 28 construction and repair jobs. Small tools were repaired as follows: 6,632 picks, 78 mattocks, 359 drills, 415 chisels, 9 basin scoops, 21 axes, 25 hatchets, 31 hand saws, 68 crosscut saws. Three thousand eight hundred and three new manhole irons were made for construction work.

*Miscellaneous construction.*—A regulator chamber equipped with automatic sewage regulator was installed at Water and L Streets SW., cost of installation \$307.47. Also regulator chamber at Bunker Hill and Sargent Roads was similarly equipped at a cost of \$238.29. A portable gasoline derrick for handling sludge removed from catchment basins at the disposal field was built at a cost, including equipment, of \$1,005.34. A 30-inch diameter turbine sewer cleaner was designed and constructed for removing deposits from inverted siphons.

*Miscellaneous work.*—The outlet channels of the northeast boundary and Fillmore Street trunk sewers were dredged at a cost of \$368.64 and \$307.84, respectively. Construction materials such as brick and stone coming from Occoquan were unloaded from barges, stored in yard, and issued to the various District works. Considerable accounting and clerical work is involved in the handling of these materials. Barricades were erected and maintained in front of Capitol, along B Street and First Street to Pennsylvania Avenue, and on both sides of Pennsylvania Avenue from the Peace Monument to Washington Circle in connection with the inaugural ceremonies, March 3, 4, and 5, 1913. The cost of the work was \$2,391.39, defrayed from appropriation for maintenance of public order.

## DIVISION D.—Construction, sewerage system.

The aggregate length of public sewers constructed and the cost of same for the several construction districts is as follows:

Section.	Length.	Cost.
	<i>Feet.</i>	
1. County west of Rock Creek.....	35,942	\$71,575.07
2. County east of Rock Creek.....	37,024	147,119.53
3. County west of Anacostia River.....	28,085	87,705.50
4. County east of Anacostia River.....	8,528	170,155.49
5. Washington City.....	17,005	71,270.28

The following is a detailed statement of sewers constructed in the various areas:

*County west of Rock Creek.*—In the county west of Rock Creek the more important development was in the upper Potomac area, where sanitary drainage was provided for the section between the Georgetown Reservoir and the Delacarla Reservoir, including the buildings of the latter, as well as the Girls' Reform School. In this area 4,465 linear feet of service sewers and 2,626.8 linear feet of service mains were constructed, a total of 7,091.8 linear feet; in Foxhall Heights 1,156.5 linear feet of service sewers; in University Heights 1,107 linear feet of service sewers; in Tenleytown 1,419 linear feet of service sewers; in Chevy Chase 4,842.2 linear feet of service sewers and 7,742.5 linear feet of service mains, a total of 12,584.7 linear feet; in Cleveland Park 61.5 linear feet of trunk sewer; in Woodley Park 304.3 linear feet of service sewers; in Massachusetts Avenue Heights 10,949 linear feet of service sewers and 279.8 linear feet of service mains, a total of 11,228.8 linear feet; and in Georgetown 427.9 linear feet of service sewers. Two hundred and six storm-water receiving basins were constructed in this section during the year.

*County east of Rock Creek.*—In the county east of Rock Creek the more important work included the extension of the drainage to Sixteenth Street Heights, the construction in upper Rock Creek valley of the main outlet sewer for 1 mile, and the construction of the Petworth Valley trunk sewer. The following is a summary of work in the several sections: Takoma 879.6 linear feet of service main and 5,718.7 linear feet of service sewers, a total of 6,597.97 linear feet; Brightwood 6,038.07 linear feet of trunk sewer, 3,615.7 linear feet of service mains, and 4,525 linear feet of service sewers, a total of 14,178.77 linear feet; Petworth 1,270.7 linear feet of trunk sewers, 2,562 linear feet of service mains, and 2,397.8 linear feet of service sewers, a total of 6,230.5 linear feet; Mount Pleasant 1,322.75 linear feet of service mains and 4,651.14 linear feet of service sewers, a total of 5,973.89 linear feet; Washington Heights 336.25 linear feet of trunk sewer, 659.37 linear feet of service mains, and 2,848.7 linear feet of service sewers, a total of 3,844.32 linear feet; Eckington 27 linear feet of service main and 171.75 linear feet of service sewers, a total of 198.75 linear feet. Forty-three storm-water receiving basins were constructed in this section during the year.

*County west of Anacostia River.*—In the area between the line of North Capitol Street and the Anacostia River, sewers were constructed in the various suburban sections, as follows: Brookland 3,881.74 linear feet of trunk sewers, 139.8 linear feet of service mains, and 12,531.04 linear feet of service sewers, a total of 16,552.53 linear feet; Langdon 5,418.2 linear feet of service sewers; Eckington 513.3 linear feet of service mains and 3,654.3 linear feet of service sewers, a total of 4,167.6 linear feet; Trinidad 2,311.27 linear feet of service sewers. Thirteen storm-water receiving basins were constructed in this section during the year.

*County east of Anacostia River.*—East of the Anacostia River sewers were constructed as follows: In Anacostia 3,429.53 linear feet of trunk sewers and 1,240.9 linear feet of service sewers, a total of 4,670.43 linear feet; and Congress Heights 3,874.92 linear feet of service sewers. Four storm-water receiving basins were constructed in this section during the year.

*Washington City.*—Construction of the Maryland Avenue relief sewer was begun May 10, 1913, and it is anticipated this important trunk sewer, including connections, will be completed by the end of the calendar year. Work on concrete outlet channel for the northeast boundary sewer at Twenty-first and A Streets was begun, and construction materials delivered for completion of the work in fiscal year 1914. The aggregate cost of construction was \$2,282.83, and the delivery of materials for completing work \$1,294.67. In the northeast section 7,298 linear feet of service mains and 2,190 linear feet of service sewers were constructed, a total of 9,488 linear feet; in the southeast section 287 linear feet of service mains and 1,907 linear feet of service sewers, a total of 2,194 linear feet; in the southwest section 1,850 linear feet of service mains

and 181 linear feet of service sewers, a total of 2,031 linear feet, also 3 automatic regulator chambers were constructed; in the northeast section 1,114 linear feet of service mains and 1,508 linear feet of service sewers, a total of 2,622 linear feet. Sixty-five storm-water receiving basins were constructed and 23 reconstructed, and 4 abandoned in this section during the year.

The following tabulation shows the approximate increase in population during 20 years and the funds appropriated for construction of the sewerage system each year during the same period:

Year.	Population.	Appropriations for construction. <sup>1</sup>	Miles constructed.	Average cost per mile.
1894.....	250,000	\$220,944.00	14.63	\$15,102.12
1895.....	255,000	215,619.00	13.23	16,290.18
1896.....	259,000	226,300.00	13.25	17,079.25
1897.....	264,000	283,947.96	17.49	16,234.87
1898.....	269,000	175,000.00	17.41	10,051.69
1899.....	274,000	158,629.30	10.18	15,582.44
1900.....	279,000	175,000.00	12.49	14,011.21
1901.....	284,000	250,000.00	13.25	18,867.92
1902.....	289,000	230,000.00	12.87	17,871.02
1903.....	294,000	170,000.00	16.42	10,353.23
1904.....	300,000	172,000.00	8.78	19,589.98
1905.....	305,000	168,650.00	11.99	14,065.89
1906.....	310,000	170,000.00	15.54	10,939.51
1907.....	315,000	333,000.00	17.09	19,485.08
1908.....	321,000	281,800.00	19.74	14,275.58
1909.....	326,000	259,500.00	18.01	14,408.66
1910.....	331,000	224,875.00	25.51	8,815.17
1911.....	341,000	219,040.00	23.18	9,449.53
1912.....	353,000	320,000.00	24.68	12,965.96
1913.....	353,000	320,000.00	23.52	13,605.44

<sup>1</sup> Excluding maintenance and sewage disposal system.

#### SEWAGE-DISPOSAL SYSTEM.

*East side intercepting sewer.*—The last section of the east side intercepting sewer, 653.81 linear feet, was completed during the year.

*Rock Creek main intercepting sewer.*—A 36-inch diameter sluice gate was installed in chamber at Rock Creek south of Massachusetts Avenue, at a cost of \$117.24. The second section of this interceptor, between Massachusetts and Connecticut Avenues, was completed; and the third section, between Connecticut Avenue and Adams Mill Road, 2,300 feet in length, four-fifths completed during the year. The fourth section, 2,000 feet in length, extending to Klinge Road, principally tunnel construction, was placed under contract.

*Anacostia main intercepting sewer.*—Sections 1 and 2 of the Anacostia main intercepting sewer, between Poplar Point and Thirteenth Street, were completed; and section 3 was begun during the year, a total of 7,200 linear feet being constructed. Work was also begun on the Poplar Point substation. A storm-water receiving basin at Monroe Street just south of the Baltimore & Ohio tracks, in line of construction of the intercepting sewer was rebuilt at a cost of \$50.23.

In addition to the above a cross connection was constructed in New Jersey Avenue SE., from the low area-trunk sewer to the B Street and New Jersey Avenue trunk sewer, to permit sewage diversion and the flushing of the deep service line, and a 36-inch diameter controlling gate installed.

*Length of main sewers and pipe sewers and number of storm-water basins constructed during the fiscal year 1913.*

Appropriation.	Main sewers.	Pipe sewers.	Storm-water basins.
	<i>Linear feet.</i>	<i>Linear feet.</i>	
Assessment and permit work.....	100.00	64,158.47	3
Miscellaneous trust-fund deposits.....	1,164.05	20,087.77	199
Main and pipe sewers.....		10,089.80	47
Suburban sewers.....	12,700.72	15,464.92	
Sewage-disposal system.....	11,779.11		
Miscellaneous appropriations.....	78.00	360.50	25
Total.....	25,821.88	110,161.46	274

## RECAPITULATION.

Total length of sewers on June 30, 1913:		
Main sewers.....	miles.....	130.90
Pipe sewers.....	do.....	513.38
Total.....		644.28
Cost of sewerage system, June 30, 1913.....		\$11,922,177.04
Cost of sewage-disposal system, June 30, 1913.....		4,366,624.43
Total.....		16,288,801.47

DIVISION E.—*Maps, records, and drafting.*

Detailed drainage studies have been made under 474 engineer department files, and 202 plats prepared for extensions of main and pipe sewers, for replacing defective sewers, and for receiving basins. Fifty-one files from the health office have required field work in order to determine a availability of various public sewers for house connections; also 57 files, for plats showing assessment on account of connections from parcel property to the public sewers.

The record maps of sewers have been kept up to date on current construction and in posting new streets and alleys. In addition much missing data of old work has been secured from field surveys and recorded thereon. Two hundred and fifty-three record maps have been repaired and bound with tape, adding greatly to the durability of these maps.

The service plats used by the public have also been kept posted with current construction, and these maps have been kept up to date by plotting thereon all new subdivisions as well as the newly established surface grades. Two worn sheets have been replaced, and four new sheets covering additional territory have been added. In previous years it has been the practice to maintain a duplicate set of these maps in the office of the permit clerk, but by giving out all information relative to sewers in this office a more efficient administration is secured, with some economy by eliminating this duplication of work.

The 100-foot scale drainage study maps, for the suburban portions of the District, have been kept posted to date with current construction, new subdivisions, and newly established grades. This set of working maps has been extended by the addition of 20 new ones, covering a large suburban area.

Four hundred and thirty-six slips, showing proposed assessment sewers, and 173 plats showing the location of all constructed assessment sewers, have been forwarded to the assessor during the year.

The health officer has been notified of the construction of new service sewers when the same abutted existing houses.

The card index of new subdivisions has been continued, and 543 subdivisions listed. In connection with this index a record is kept on the posting of these subdivisions on record maps, drainage-study maps, service maps, and topographical maps; also, upon the subdivision of parcel property, a record is kept of any special assessment on account of existing service sewers.

Eight old and worn grade sheets have been replaced and 387 new grade sheets have been made, recording the work of the year. An additional filing cabinet has been purchased and the 9,000 grade sheets of this office have been rearranged for greater convenience of access.

In order to keep in touch with the development of the water-distribution system and to secure harmonious development of the water distribution and sewerage systems, the posting of a map showing all ordered water mains has been begun.

All street-paving schedules of the surface division, covering 520 jobs, have been carefully considered and studies prepared, where necessary, for abandoning, reconstructing, or constructing sewers in advance of same.

All surface division maps for establishing new street grades have been carefully studied with reference to their effect on the drainage of the District; and modifications have been recommended where deemed necessary.

Plans, estimates, and specifications have been prepared for sewer construction under 16 contracts.

An inspection has been made of premises without sanitary sewers throughout the District, and 3,510 such premises have been listed. This has been done with a view of extending the sewerage system to eliminate insanitary box privies and cesspools

where practicable. The following is a statement of existing premises without sewers in the several sections:

County west of Rock Creek.....	641
County east of Rock Creek.....	270
County west of Anacostia River.....	610
County east of Anacostia River.....	1,865
Washington City.....	124
Total.....	3,510

Fifty-nine right-of-way deeds and plats have been prepared in connection with the extension of the public sewerage system, and 38 such rights of way have been acquired. These are listed in Table No. 17, appending this report.

#### SECTION F.—*Records and accounts.*

The work of this division consists in the preparation of requisitions and vouchers, records of cost of construction, cost keeping, preparing pay rolls and material and equipment accounting. It included for the year 1,058 construction jobs, 9,240 foremen's reports, 4,410 card records, 1,272 supply bills, 517 pay rolls, 1,127 requisitions, 323 transfer and refund vouchers, 981 tool orders, 712 engineer department files, 208 letters, 650 completion reports, and 2,005 miscellaneous reports.

The following is a summary statement of account of the various sewer appropriations for the fiscal year 1913, viz:

##### *Sewerage system.*

#### Cleaning and repairing sewers and basins:

Appropriation.....	\$65,000.00
Repayments account of deposits.....	472.77
	<hr/> 65,472.77

#### Expended—

Contract construction.....	\$200.00
Mechanics, laborers, watchmen.....	34,877.95
Drivers and gate tenders.....	9,264.85
Inspectors and other per diem employees.....	1,404.25
Construction material and tools.....	2,682.42
Repairs to equipment; equipment and supplies.....	10,617.88
Paid surface division for repaving work.....	379.69
Paid engineer department stables for forage, blacksmith work, etc.....	5,593.65
Paid purchasing officer's office for salaries.....	187.45
	<hr/> 65,208.14

Unexpended balance.....	<hr/> 264.63
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#### Suburban sewers:

Appropriation.....	130,000.00
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#### Expended—

Contract construction.....	\$59,755.69
Outstanding contracts and material to complete same.....	15,200.00
Day labor construction.....	29,261.68
Inspectors and other per diem employees.....	4,566.25
Construction material and tools.....	13,784.11
Paid surface division for repaving work.....	3,907.67
Paid engineer department stables for forage, blacksmith work, etc.....	1,932.02
Paid purchasing officer's office for salaries.....	1,317.43
Paid chief clerk's office for salaries.....	211.50
	<hr/> 129,936.35

Unexpended balance.....	<hr/> 63.65
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Main and pipe sewers and receiving basins:

Appropriation.....	\$65,000.00
Repayments on account of contingent charges.....	462.95
	<u>65,462.95</u>

Expended—

Contract construction.....	\$11,125.00
Outstanding contracts and material to complete same.....	4,100.00
Day-labor construction.....	23,469.59
Construction material and tools.....	14,153.77
Inspectors and other per diem employees.....	8,316.97
Paid surface division for repaving work.....	2,472.82
Paid engineer stables for forage, blacksmith work, etc.....	962.91
Paid purchasing officer's office for salaries, etc....	754.94
Paid chief clerk's office for salaries.....	58.50
	<u>65,414.50</u>

Unexpended balance..... 48.45

Assessment and permit work, sewers:

Appropriation.....	125,000.00
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Expended—

Contract construction.....	3,397.38
Day-labor construction.....	82,786.62
Construction material and tools.....	26,111.58
Inspectors and other per diem employees.....	3,050.75
Paid surface division for repaving work.....	6,105.71
Paid engineer department stables for forage, blacksmith work, etc.....	1,975.34
Paid purchasing officer's office for salaries, etc....	1,289.85
Paid chief clerk's office for salaries.....	153.00
	<u>124,870.24</u>

Unexpended balance..... 129.76

Sewer construction, whole-cost system:

Unexpended balance of deposits from fiscal year 1912.....	4,746.53
Amount received from various depositors, fiscal year 1913.....	54,558.63

Total received..... 59,305.16

Expended—

Contract construction.....	5,831.51
Day-labor construction.....	33,235.78
Construction material.....	12,359.80
Paid surface division for repaving work.....	668.77
Contingent charges for supervision, engineering, wear of tools, etc.....	2,279.78
Amount returned to depositors.....	2,997.62
Amount carried over to 1913 for completion of work.....	1,931.90
	<u>59,305.16</u>

Total accounted for..... 59,305.16

Maintenance and operation, sewage pumping service:

Appropriation.....	44,500.00
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Expended—

Mechanics, laborers, and watchmen.....	21,319.91
Inspectors and other per diem employees.....	838.00
Coal, oils, waste, and other supplies.....	18,003.96
Tools and equipment renewals.....	3,768.85
	<u>43,930.72</u>

Unexpended balance..... 569.28

## SUMMARY OF EXPENDITURES.

*Sewerage system.*

Cleaning and repairing.....	\$65,208.14
Maintenance and operation, 1913.....	43,930.72
Main and pipe sewers:	
1912.....	4,113.88
1913.....	61,314.50
Suburban sewers:	
1912.....	31,980.27
1913.....	114,736.35
Assessment and permit work:	
1912.....	6,166.88
1913.....	124,870.24
Permit work.....	2,043.44
Miscellaneous trust fund deposits.....	52,095.86
Miscellaneous appropriations.....	11,122.12
Condemnation.....	968.30
Outstanding contracts:	
Main and pipe, 1913.....	4,100.00
Suburban sewers, 1913.....	15,200.00
Total.....	537,850.70

The following are the payments into the Treasury, on account of assessments for service sewers under the appropriations noted during the fiscal year 1913:

Main and pipe sewers.....	\$710.10
Suburban sewers.....	5,606.33
Assessment and permit work, sewers.....	74,530.71
Total.....	80,847.14

*Sewage-disposal system.*

East side interceptor, boundary to Brookland:	
Unexpended balance from fiscal year 1912.....	\$20,258.20
Expended—	
Contract construction.....	\$14,199.25
Construction material.....	5,335.64
Inspectors and other per diem employees.....	719.47
	20,254.36
Unexpended balance.....	3.84
Rock Creek main interceptor:	
Unexpended balance from fiscal year 1912.....	18,400.19
Appropriation for fiscal year 1913.....	40,000.00
	58,400.19
Expended:	
Contract construction.....	12,677.00
Day-labor construction.....	879.67
Construction material and tools.....	4,932.57
Inspectors and other per diem employees.....	974.75
Paid purchasing officer's office for salaries.....	374.85
Outstanding contracts and material for completion of same.....	38,500.00
	58,338.84
Unexpended balance.....	61.35
Anacostia main interceptor:	
Unexpended balance from fiscal year 1912.....	45,291.74
Appropriation for fiscal year 1913.....	40,000.00
	85,291.74

Anacostia main interceptor—Continued.

Expended—

Contract construction.....	\$67,588.76	
Day-labor construction.....	2,706.65	
Construction material and tools.....	10,592.01	
Inspectors and other per diem employees.....	2,140.37	
Paid surface division for repaving work.....	1,057.21	
Paid purchasing officer's office for salaries.....	374.85	
Outstanding contracts and material for completion of same.....	800.00	
		\$85,259.85
Unexpended balance.....		31.89

Unused balances:

Unexpended balance July 1, 1912.....	4,057.90
--------------------------------------	----------

Expended—

Contract construction.....	1,144.25	
Day-labor construction.....	1,972.66	
Construction material and tools.....	756.56	
Inspectors and other per diem employees.....	162.50	
		4,035.97
Unexpended balance.....		21.93

SUMMARY OF EXPENDITURES SEWAGE-DISPOSAL SYSTEM.

East side interceptor.....	\$20,254.36
Rock Creek main interceptor.....	19,838.84
Outstanding contracts—Rock Creek main interceptor.....	38,500.00
Anacostia main interceptor.....	84,459.85
Outstanding contracts—Anacostia main interceptor.....	800.00
Unused balances.....	4,035.97

Total sewage-disposal system.....	167,889.02
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Purchase and condemnation of land for rights of way for sewers:

Appropriation.....	1,000.00
Expended: Cost of rights of way, titles, and recorder fees.....	968.30
Unexpended balance.....	31.70

Total expenditures.

Sewerage system.....	\$537,850.70
Sewage-disposal system.....	167,889.02
Purchase and condemnation of land for rights of way.....	968.30
Total expenditures during fiscal year 1913.....	706,708.02

ALLOTMENTS.

Statement of expenditures under allotments made to other departments from sewer appropriations, fiscal year 1913.

Appropriation.	Engineer stables.	Purchasing officer.		Chief clerk, Engineer depart- ment.	Total.
		Salaries.	Sand wharf.		
Total allotments.....	\$10,638.30	\$3,748.65	\$497.28	\$423.00	\$15,307.23
Expended:					
Cleaning and repairing.....	5,593.65	187.45			5,781.10
Main and pipe.....	1,012.74	562.30	192.64	58.50	1,826.18
Suburban sewers.....	1,981.85	1,124.60	192.64	211.50	3,510.59
Assessment and permit.....	2,025.17	1,124.60	112.00	153.00	3,414.77
Anacostia main interceptor.....		374.85			374.85
Rock Creek main interceptor.....		374.85			374.85
Total expenditures.....	10,613.41	3,748.65	497.28	423.00	15,282.34

*Statement of expenditures under allotments from outside departments to sewer department during the fiscal year 1913.*

Appropriation.	Roping Pennsyl- vania Avenue.	Public comfort com- mittee.	Health Exhibit.	Conti- gent expenses.	Total.
Total allotments .....	\$2,492.64	\$25.00	\$304.56	\$1,078.06	\$3,900.26
Expended:					
Maintenance of public order .....	2,491.18				2,491.18
Do .....		24.40			24.40
XV International Congress of Hygiene and Demog- raphy .....			304.56		304.56
Contingent and miscellaneous expenses .....				1,078.06	1,078.06
Total expenditures .....	2,491.18	24.40	304.56	1,078.06	3,898.20

*Statement of expenditures for per diem employees, fiscal year 1913.*

Cleaning and repairing .....	\$1,809.25
Sewerage pumping service .....	930.50
Main and pipe sewers .....	3,740.12
Suburban sewers .....	6,641.73
Assessment and permit .....	3,860.25
Anacostia main interceptor .....	2,282.37
Rock Creek main interceptor .....	1,088.25
East side interceptor .....	690.00
Unused balances .....	182.50
Total .....	21,224.97

#### OCCOQUAN PRODUCTS.

*Brick and broken stone received and issued at sewer department yard.*

Receipts—Broken stone:		
On hand July 1, 1912 .....	cubic yards..	849.70
Received during fiscal year 1913 .....	do .....	2,317.50
Total .....		3,167.20
Receipts—Brick:		
On hand July 1, 1912—		
Red brick .....	number..	25,900
Arch brick .....	do .....	10,000
Salmon brick .....	do .....	43,400
Received during fiscal year 1913—		
Red brick .....	do .....	1,700,700
Arch brick .....	do .....	30,000
Total .....		1,810,000
Issues—Broken stone:		
Sewer division .....	cubic yards..	2,628.92
Surface division .....	do .....	436.75
Water department .....	do .....	3.00
Total .....		3,068.67
Issues—Brick:		
Sewer division .....	number..	411,727
Public schools .....	do .....	1,339,500
Total .....		1,751,227

Stock on hand June 30, 1913:

Broken stone.....	cubic yards..	98.53
Red brick.....	number..	58,233

## FINANCIAL STATEMENT—OCCOQUAN PRODUCTS.

## Debits:

Amount paid workhouse for brick.....	\$8,031.55
Amount paid workhouse for broken stone.....	2,353.09
Cost of unloading brick, and handling.....	1,534.29
Cost of unloading stone, and handling.....	611.73
	<hr/>
	\$12,530.66

Balance due workhouse June 30, 1913:

58,233 red brick, stock on hand.....	291.16
29.75 cubic yards broken stone, stock on hand.....	22.31
Balance, account of unloading.....	200.81
	<hr/>
	514.28

Total..... 13,044.94

## Credits:

Received for brick issued to sewer division.....	2,589.77
Received for brick issued to public schools.....	7,386.50
Received for broken stone issued to sewer division.....	2,628.92
Received for broken stone issued to surface division.....	436.75
Received for broken stone issued to water department....	3.00

Total..... 13,044.94

DIVISION G.—*Underground construction, public-service corporations.*

The supervision of underground constructions of public-service corporations included 1,259 construction jobs, requiring in each case a study with a view to securing the best arrangement with relation to existing structures and the most economical occupation of public space.

The construction is inspected during the progress of work, and locations are made after completion and recorded on record sheets and maps. A card record is prepared for each construction.

The work is summarized as follows:

Permits prepared upon application.....	1,259
New record sheets made.....	1,291
Record cards made.....	1,259
New gas mains laid.....miles..	13.8
Electric duct laid.....do...	46.3

The number of houses connected with electric conduits were 934, with gas mains 1,348. The total mileage of gas mains and electric duct was considerably less than one-half of that laid in the preceding year, while the number of construction jobs exceeded the number for the preceding year. This decrease in length of extensions is accounted for by the completion of the Postal Telegraph Cable Co.'s system of conduits, the construction of which contributed largely to the mileage of the preceding year. The electric and gas companies made an exceptionally large number of house connections to existing lines. The conduit extension for light and power was 36 miles less than the preceding year and the gas main extensions were nearly 13 miles less.

To facilitate the work and avoid duplication, permits are now prepared in this office. The time required for obtaining a permit has thus been reduced and a carbon copy of the permit is secured for the permanent files of the engineer department.

In addition to the above work, the following construction was located, inspected, and recorded:

## UNITED STATES GOVERNMENT WORK.

Three thousand one hundred and forty-two linear feet of electric duct, 3,316 linear feet of steam pipe and underdrain, 4 sewer connections, and a 4 by 6 foot tunnel across F street NW. between Seventh and Eighth Streets was constructed under nine permits.

## PRIVATE CONDUITS.

One hundred and six-tenths linear feet of private electric duct was laid in public space under two permits.

## VAULT INSPECTIONS.

Forty-one applications for new vaults were acted upon, 89 vaults were located, and 179 record sheets of vault construction were prepared.

## WATER DEPARTMENT CONNECTIONS WITH THE SEWERAGE SYSTEM.

Two hundred and ninety-three permits were issued to the water department for sewer connections from fire hydrants, blow-offs, street hydrants, and watering troughs.

## FIFTEENTH INTERNATIONAL CONGRESS ON HYGIENE AND DEMOGRAPHY.

For the health exhibit of the Fifteenth International Congress on Hygiene and Demography held in Washington September 23-28, 1912, the sewer department prepared a special exhibit showing working models illustrating the work now done here and improvements made in sewerage and sanitation.

This exhibit received the highest award given in the sanitary engineering section.

I respectfully recommend that construction appropriations for the sewerage system be made available until expended. There is no discernable advantage in the present practice of lapsing these appropriations with the fiscal year. The funds could be more effectively used if available until expended. The present practice not only entails the loss of a considerable percentage of each annual appropriation, but because of this limitation the expenditure is in part, at least, uneconomical.

The following is a statement of the unexpended balances of the two principal construction appropriations from 1901 to 1912, inclusive:

Fiscal year.	Main and pipe sewers.	Suburban sewers.	Total.	Fiscal year.	Main and pipe sewers.	Suburban sewers.	Total.
1901.....	\$1,656.53	\$2,237.61	\$3,894.14	1908.....	\$3,878.93	\$815.05	\$4,693.98
1902.....	2,610.75	6,745.80	9,356.55	1909.....	678.12	570.80	1,248.92
1903.....	3,948.39	5,762.88	9,711.27	1910.....	622.34	4,486.94	5,109.28
1904.....	268.70	2,072.54	2,341.24	1911.....	489.36	401.36	890.72
1905.....	5,676.05	6,926.46	12,602.51	1912.....	3,716.32	791.12	4,507.44
1906.....	7,177.09	4,798.30	11,975.39				
1907.....	255.68	11,038.27	11,293.95	Total...	30,978.26	46,647.13	77,625.39

Very respectfully, your obedient servant,

ASA E. PHILLIPS,  
*Superintendent of Sewers.*

To Capt. MARK BROOKE,  
*Corps of Engineers, United States Army,  
Assistant to Engineer Commissioner, District of Columbia.*

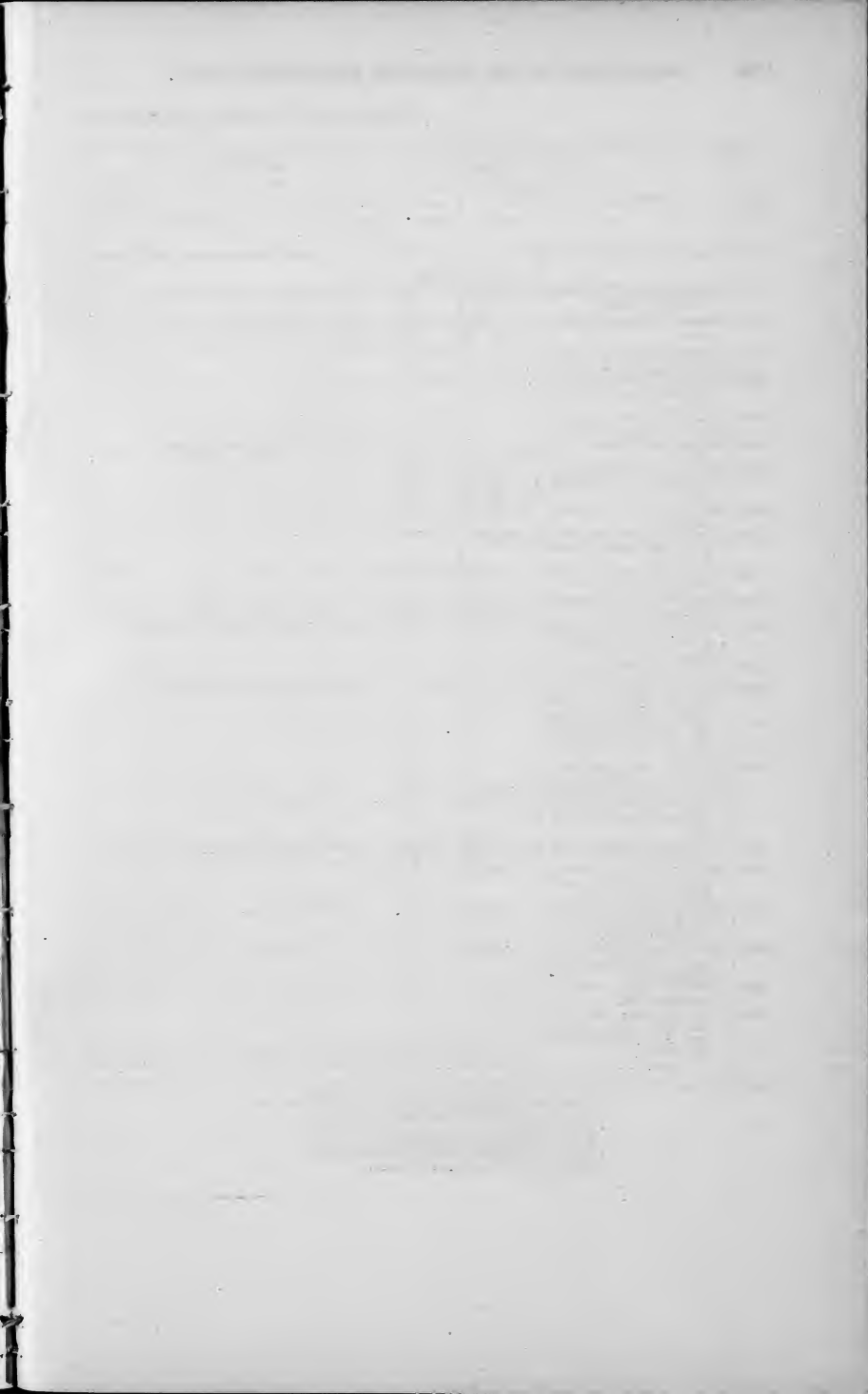


TABLE NO. 1.—Sewerage system contract

Contract No.	Location.	Pipe sewer.		Main sewer.	
		Length.	Size.	Length.	Size.
4873	Valley of Rock Creek, north of Military Road.	<i>Fect.</i> 162.00 4,763.70	<i>Inches.</i> 20 6	<i>Fect.</i> 4,807.00	2 feet by 2 feet 6 inches.....
5061	Petworth Valley outlet sewer.	180.20 937.00	12 <sup>4</sup> 6	362.70 436.30 410.70	4 feet 6 inches..... 3 feet 6 inches..... 3 feet 9 inches.....
5069	Bunker Hill Road NE., Sargent Road to Otis St.		( <sup>5</sup> )		
5083	Anacostia River, Stickfoot Branch outlet to bulkhead.		( <sup>5</sup> )		
5084	Anacostia River, Chicago St. to bulkhead line.		( <sup>5</sup> )		
5085	Chicago St., outlet trunk sewer.			1,121.92 627.48	6 feet by 5 feet 3 inches..... 3 feet 6 inches by 3 feet 6 inches...
5110B	16th St. NW., between Arkansas Ave. and Webster St.	409.50 386.50 776.70	21 18 12		
5110C	14th St. SW., between C and D Sts.	474.50	24		
5110F	Hamlin St., 20th St., Fulton St., and Rhode Island Ave. NE.	1,436.20	10		
5110G	Newton St. NE., between 14th and 17th Sts.	1,375.00	10		
5110H	Church St. NW., between 16th and 17th Sts.	510.00 93.80	21 18		
5258	Michigan Ave., between Shepherd and Randolph Sts.			1,519.50	4 feet 6 inches by 6 feet 3 inches....
5285	Outlet of Anacostia trunk sewer in Anacostia River.		( <sup>5</sup> )		
5286	Outlet section of Stickfoot Branch trunk sewer between present shore line and established bulkhead line of the Anacostia River.			1,544.25	10 feet by 8 feet 5 inches.....
5294	16th St. NE., between Kearney and Hamlin Sts.; Irving St. NE., between 15th and 17th Sts.; also alley of squares 4139 and 4141.	1,082.40 1,079.66	12 10		
5295	Park Place, between Park Road and Otis St.	9.00 3.00	18 12	918.85	3 feet by 3 feet.....
5304	Military Road between Rock Creek Drive and Piney Branch Road.	2,628.70	15		
5307	Military Road between Broad Branch Road and Connecticut Ave.	3,551.50	15	12.00	Culvert.....
5308	Broad Branch Valley between Rittenhouse and Nevada Ave.	3,058.00	12		
5327	Fillmore trunk sewer to bulkhead line.				
5331	G St. between 15th and Maryland Ave., Maryland Ave., between G and 7th Sts.				
	Total.....	22,916.73		11,760.70	

<sup>1</sup> Also 10 feet transition section and 15 feet bell section.

<sup>2</sup> \$17,829 of 1912 work not included.

<sup>3</sup> Reported 1912.

<sup>4</sup> \$2,271 of 1912 work not included.

<sup>5</sup> No sewer; piling and timber platform only.

<sup>6</sup> \$2,870.89 of 1912 work not included.



construction, fiscal year ended June 30, 1913.

Allowance to contractor.	Materials.		Costs.		Total cost.	Appropriation.	Contractor.
	Charged.	Not charged.	Inspection.	Pavement repairs.			
\$9,680.48	\$1,151.07	\$1,565.22	\$287.08	\$71.80	\$12,755.65	Suburban sewers, 1911.	W. F. Brenizer Co.
7,914.63	1,636.59	227.38	308.75	130.58	10,217.93	Suburban sewers, 1912.	F. G. Gummel.
1,689.31	196.86	924.17	21.50	180.57	3,012.41	do.	Geo. Hyman.
11,754.48			406.19		12,160.67	do.	Clark & Winston Co.
2,435.95			37.50		2,473.45	do.	Do.
13,653.42	4,442.50	18.22	423.50		18,537.64	do.	W. F. Brenizer Co.
3,110.99	222.21	580.84	90.34		4,004.38	Assessment and permit, 1912.	Do.
2,572.03	100.50	409.99	102.00	66.27	3,250.79	Main and pipe, 1912.	Do.
4,564.85	261.92	420.30	96.00		5,343.07	Assessment and permit, 1912.	Do.
2,198.54	143.60	222.85	80.00	482.70	3,127.69	do.	Do.
1,566.61	121.86	452.11	62.00	442.38	2,644.96	Main and pipe, 1912.	Do.
11,243.23	2,254.62	152.47	181.33		13,831.65	Suburban, 1913.	Do.
800.73			49.00		849.73	do.	Portch & Jones.
18,762.94	8,497.35	14.39	475.42		27,750.10	do.	E. G. Gummel.
2,762.58	254.79	380.01	129.00		3,526.38	Assessment and permit, 1913.	W. F. Brenizer Co.
5,584.18	925.65	23.71	226.00	(11)	6,759.54	Suburban, 1913.	Do.
2,900.85	339.10	944.17	132.00	62.40	4,378.52	do.	Do.
4,348.24	1,263.90	484.52	327.50		6,424.16	do.	Geo Hyman.
2,975.13	376.09	580.59	108.00	7.09	4,046.90	do.	W. F. Brenizer Co.
						Suburban, 1914.	Geo. Hyman.
9,114.70	2,010.30		223.00		11,348.00	Main and pipe, 1913.	Do.
119,633.87	24,198.91	7,400.94	3,766.11	1,443.79	156,443.62		

<sup>1</sup> \$3,914.92 of 1912 work not included.

<sup>2</sup> \$1,268.91 paid by D. J. Howell.

<sup>3</sup> \$52 of 1912 work not included.

<sup>10</sup> \$4,284.91 paid by Chas. H. Morgan.

<sup>11</sup> Repaving cost not yet reported.

TABLE NO. 2.—Sewage disposal system contract construction, fiscal year ended June 30, 1913.

Contract No.	Contractor.	Location.	Character of work.	Payment on contracts.	Materials.		Cost of—		Total cost.	Completed.	Appropriation.
					Charged to contractor.	Not charged to contractor.	Inspection.	Repairs to pavements.			
4810H	Geo. Hyman....	Twentieth St. NE., Monroe St. to Bunker Hill Road.	East side interceptor.	\$0, 154.83	\$1, 024.94	\$129.52	\$94.50	.....	1 \$7, 403.79	Yes...	East side interceptor.
4950	W. F. Brenizer Co.	East side of Anacostia River, Poplar Point to Anacostia Bridge.	Anacostia main interceptor.	58, 025.26	6, 378.31	510.00	911.36	\$1, 068.63	266, 883.56	Yes...	Anacostia main interceptor.
5068	Geo. Hyman....	Bunker Hill Road NE., Twentieth St. extended	East side interceptor.	11, 543.82	2, 507.34	223.62	525.75	371.30	15, 171.83	Yes...	East side interceptor.
5191	W. F. Brenizer Co.	Rock Creek Valley, northward from Connecticut	Rock Creek main interceptor.	12, 677.00	2, 637.00	.....	310.47	.....	15, 624.47	No....	Rock Creek main interceptor.
5319	W. F. Brenizer	East Side Anacostia River between Monroe St. and 13th St.	Anacostia main interceptor.	7, 689.48	1, 252.80	71.56	202.50	.....	9, 216.34	No....	Anacostia main interceptor.
5320	W. F. Brenizer Co.	East Side Anacostia River between 13th St. and Pennsylvania Avenue Bridge.	.....do.....	21, 900.20	189.80	.....	288.50	.....	22, 288.50	No....	Do.
5332	E. G. Gummel...	Foot of Howard Ave., Anacostia, near Poplar Point.	.....do.....	1, 500.00	.....	.....	.....	.....	1, 500.00	No....	Do.
		Total.....	.....	119, 490.59	13, 910.19	934.70	2, 303.08	1, 429.93	138, 068.49		

\* \$12,388.50 of 1912 work not included.

\* \$23,165.25 of 1912 work not included.

TABLE No. 3.—Sewer construction under permit system from the appropriation for assessment and permit work, fiscal year ended June 30, 1913.

Order No.	Location.	Length.	Size.	Amount of deposit.	Cost.		Total cost.	Amount returned.	For whom done.
					To District of Columbia.	To depositor.			
		<i>Feet.</i>	<i>Inches.</i>						
1	Fifth Street NW., between V and W Streets.	320.0	10	\$300.00	\$237.81	\$237.80	\$595.61	\$2.20	D. J. Dunigan.
2	Square 155, in alley.	40.0	10	43.01	43.01	43.01	86.02	.....	Clarke Waggoner.
3	Eleventh Street NW., between Lamont and Park Road.	118.3	12	111.75	109.92	109.92	219.84	1.83	Guy S. Zapp.
4	Square 2668, in alley.	75.4	8	60.00	43.89	43.88	87.77	16.12	Jos. J. Morbs.
5	E Street SE., between Twelfth and Thirteenth Streets; Thirteenth Street between E and D Streets.	111.9	12	125.00	123.28	123.28	246.56	1.72	H. R. Howenstein.
6	North Capitol Street, between Massachusetts Avenue and G Street.	275.7	18	600.00	497.10	497.10	994.20	102.90	W. G. Cornell & Co.
7	H Street NW., between Twelfth and Thirteenth Streets.	282.0	12	375.00	307.20	307.20	614.40	67.80	Davis Construction Co.
8	Fifth Street NW., between Oakdale and Elm Streets.	166.1	12	200.00	183.99	183.98	367.97	16.02	D. J. Dunigan.
9	F Street NW., between Tenth and Eleventh Streets.	40.0	15	350.00	269.02	269.02	538.04	80.98	C. L. Harding.
10	Right of way, line of Taylor Street between Thirteenth Street and Kansas Avenue.	90.7	12	200.00	168.25	168.25	336.50	31.75	James Nolan & Son.
		100.0	(1)						
	Total .....	1,620.1	.....	2,364.76	2,043.47	2,043.44	4,086.91	321.32	

12 feet by 2 feet 6 inches.

TABLE NO. 4.—Sewer construction under assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1913.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
100	Square 1453, in alley.....	<i>Lin. ft.</i> 186.50	<i>Inches.</i> 10	\$55.92	\$124.82	.....	\$180.74
101	Ellicott Pl., between Sheridan and De Russey.....	221.80	8	57.81	320.56	.....	378.37
102	2d St. NE., between T and U Sts..	87.00	15	59.10	150.83	\$10.45	220.38
103	do.....	( <sup>1</sup> )	( <sup>1</sup> )	12.79	7.50	139.62	159.91
104	2d St. NE., T and U, and U, 2d, Summit, Todd and U Sts.....	341.30	10	110.65	370.67	.....	481.32
105	Todd, between 2d and Summit, and Summit, between Todd and U Sts.....	215.00	10	67.96	306.67	.....	374.63
106	Potomac Ave. SE., between 16th and 17th Sts.....	81.00	12	31.82	65.75	.....	97.57
107	Todd St., between 2d and Summit, and Summit between Todd and U Sts.....	450.20	12	84.10	432.66	.....	516.76
108	Gresham Pl., west of 5th St. NW.	223.30	12	73.32	293.49	.....	366.81
109	Calvert St., between Connecticut Ave. and Woodley Pl.....	25.00	10	7.11	15.50	.....	22.61
110	Wisconsin Ave., between 34th and S Sts. NW.....	270.00	10	62.25	305.88	.....	368.13
111	14th St., between C and D Sts.....	167.00	12	76.06	207.44	.....	283.50
112	9th St. NE., between B and C Sts..	53.50	12	33.21	78.52	5.40	117.13
113	L St. NE., between 8th and 9th Sts.	250.00	10	94.59	300.19	.....	394.78
114	16th St. NW., east side, between Ingraham and Kennedy Sts.....	338.40	12	89.17	545.47	.....	634.64
115	Columbia Road, Soldiers' Home, to Warde St., California Road to Irving St.....	19.30 286.20 209.30	15 12 10	204.47	751.79	.....	956.26
116	47th Pl., between Conduit Road and Reservoir.....	280.00	10	84.29	297.93	.....	382.22
117	Harrison St., between 41st St. and Belt Road.....	109.00	12	47.23	85.27	.....	132.55
118	18th St., between Kalorama and Columbia Roads.....	250.00	15	116.98	401.93	460.62	979.53
119	do.....	300.00	15	170.96	655.67	.....	826.63
120	do.....	300.00	12	97.98	535.62	.....	633.60
121	do.....	235.00	12	69.96	486.72	.....	556.68
122	Quincy St., between Bunker Hill Road and 12th St. NE.....	358.40	10	116.31	343.08	21.00	480.39
123	Quincy St., between 12th and 13th Sts. NE.....	570.60	10	144.68	555.14	30.89	730.71
124	Quincy St., between 13th and 14th Sts. NE.....	659.15	10	175.80	450.19	.....	625.99
125	Trenton Pl., between Brothers Pl. and Nichols Ave.....	335.70	12	111.87	474.37	.....	586.24
126	Nichols Ave., Trenton St., and High View Pl.....	395.00	10	103.34	390.98	.....	494.32
127	Nichols Ave., High View, and Waclark Pl.....	481.40	10	146.99	595.70	31.13	773.82
128	Nichols Ave., Waclark, and High View Pl.....	328.20	10	86.89	392.09	.....	478.98
129	Nichols Ave., Trenton Pl., and Sterling St.....	409.12	10	124.57	477.89	.....	602.46
130	Nichols Ave., Sterling, and Vallajo Sts.....	262.30	10	73.24	337.99	.....	411.23
131	Kennedy St. between Kansas Ave. and 2d St. NW.....	256.00	12	180.64	543.94	.....	724.58
132	Kennedy St., between 2d and 1st Sts. NW.....	578.00	10	158.82	418.82	.....	577.64
133	Kennedy St., between 1st St. and 1st Pl. NW.....	425.20	10	128.22	570.95	.....	699.17
134	Kennedy St., between 1st Pl. and North Capitol St. NW.....	305.60	10	95.75	374.05	.....	469.80
135	North Capitol St., between Kennedy and Longfellow Sts. NW.....	390.40	10	103.33	239.61	.....	342.94
136	North Capitol St., between Longfellow and Madison Sts. NW.....	390.40	10	105.96	409.53	.....	515.49
137	North Capitol St., between Madison St. and Milmarson Pl. NW.....	260.70	10	80.81	305.44	.....	386.25
138	North Capitol St., between Milmarson Pl. and Nicholson St. NW.....	261.00	10	79.41	281.87	.....	361.28
139	Nicholson St., between North Capitol and I Sts. NW.....	298.00	10	69.32	319.56	.....	388.88
140	Ellicott St., between Belt Road and Reno Reservoir.....	28.00	8	27.58	23.63	.....	51.21

<sup>1</sup> Reported in 1912.

TABLE NO. 4.—Sewer construction under assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repa-ving.	
141	24th St., between Franklin and Everts Sts. NE.....	Lin. ft. 283.00	Inches. 10	\$36.88	\$477.66	\$122.69	\$697.23
142	Connecticut Ave., between Morrison and McKinley Sts.....	362.50	12	52.97	402.41	5.77	461.15
143	Wisconsin Ave., north of 35th St.....	13.85	8	3.23	12.25	13.00	28.48
144	33d St., between Keokuk and Morrison Sts. NW.....	402.00	10	103.06	367.75	.....	470.81
145	Jackson St. NE., between 20th and 22d Sts.....	120.00	10	27.51	166.70	.....	194.21
146	Alley of square 1001—11th and 12th, N and O Sts. SE.....	35.40	10	8.97	43.84	28.50	81.31
147	North Capitol St., between Douglas and Everts.....	360.00	12	164.36	412.38	.....	576.74
148	Belmont St. NW., north side, east of 15th St.....	36.30	10	34.64	101.25	.....	135.89
149	Irving St. NE., between 13th and 14th Sts.....	107.00	10	25.07	103.16	.....	128.23
150	15th St. NE., between D and C Sts.....	66.00	12	35.46	122.34	.....	157.80
151	North side Florida Ave. and in 18th St. north of Florida Ave.....	13.35 128.95	21 18	131.67	279.23	21.84	432.74
152	Along southwest boundary of United States Insane Asylum.....	234.50	10	65.92	244.76	.....	310.68
153	41st St., between Chesapeake and Brandywine Sts.....	195.80	10	50.01	141.50	.....	191.51
154	Monroe St., between 19th and 18th Sts. NW.....	35.00	12	11.84	44.85	13.51	70.20
155	Connecticut Ave., between K and L Sts. NW.....	46.00	12	33.28	80.75	.....	114.03
156	Florida Ave., between W and V Sts. NW.....	328.15 213.40	18 12	285.45	651.40	11.96	948.81
157	Alley of square 288—G and H, 13th and 14th Sts. NW.....	102.60	12	113.27	370.26	165.18	648.71
158	Right of way between Cottrell Pl. and Canal Road.....	98.80 163.70	10 18	188.03	625.52	.....	813.55
159	Sheridan Pl., Chain Bridge Road, Conduit Road, Nebraska Ave.....	116.50	12	29.72	123.81	.....	153.53
160	Nebraska Ave., between Potomac Ave. and Conduit Road, square 1400.....	627.75	10	191.93	691.56	.....	883.49
161	Randolph St. NE., between Bunker Hill Road and 13th St.....	655.80	10	189.16	641.03	.....	830.19
162	Columbia Road NW., between Warder St. and Georgia Ave.....	232.50 323.50	10 18	73.06	314.96	.....	388.02
163	M St. NW., between 22d St. and New Hampshire Ave.....	14.00 20.00	15 12	232.35	664.69	277.69	1,174.73
164	Hamlin St. NE., between 16th and 15th Sts.....	50.00	10	20.97	80.32	.....	101.29
165	14th St. NW., between Kennedy and Longfellow Sts.....	361.10	21	335.68	655.60	100.03	1,091.31
166	South Carolina Ave., between 11th and 10th Sts. SE.....	92.00 39.00	12 12	76.75	148.53	.....	225.28
167	P St. NW., between Arizona Ave. and Foxhill Road.....	355.70	15	215.47	604.90	.....	820.37
168	do.....	520.80	10	136.52	285.84	.....	422.36
169	Alley of square 3621—4th and 5th, V and W Sts. NE.....	113.00	12	34.23	160.46	.....	194.69
170	Upshur St., between 8th and 9th Sts. NW.....	196.70	12	74.85	240.26	.....	315.11
171	M St., between Florida Ave. and 6th St. NE.....	180.00	10	49.37	170.67	.....	220.04
172	Jocelyn Pl. NW., east of Connecticut Ave.....	353.75	10	116.43	272.12	.....	388.55
173	Connecticut Ave., between Kana-wha and Jenifer Sts. NW.....	525.90	10	73.41	490.53	.....	563.94
174	Ashby St., between Conduit Road and 49th St.....	468.00	10	131.75	660.53	.....	792.28
175	49th St., north of Ashby St.....	47.00	10	14.02	99.09	.....	113.11
176	Conduit Road, north of Ashby St.....	118.30 290.70	12 10	131.72	433.07	.....	564.79
177	6th St. NW., between W and Trumbull Sts.....	117.07	12	34.59	130.35	19.49	184.43
178	Woodley Road, between Klinge Road and Cathedral Ave.....	262.00	10	85.15	487.50	9.93	582.58
179	In Fulton St., between 34th St. and 34th Pl.....	321.00	24	393.14	698.19	.....	1,091.33

TABLE NO. 4.—*Sewer construction under assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1913—Continued.*

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
180	In Fulton St., between 34th Pl. and 35th St.	Lin. ft. 320.60	Inches. 21	\$355.32	\$519.94	.....	\$875.26
181	In Fulton St., between 35th St. and Massachusetts Ave.	265.65	18	148.33	394.12	.....	542.45
182	In line of Fulton St. crossing Massachusetts Ave.	93.85	18	59.70	99.85	\$9.52	169.07
183	In Rock Creek Drive, between Benton St. and Massachusetts Ave.	396.90	12	155.78	534.65	.....	690.43
184	Livingstone St. NW., between 39th and 41st Sts.	60.35	12	15.98	85.75	51.47	153.20
185	U St., between Lincoln Road and 1st St. NE.	190.60	12	76.50	216.22	.....	292.72
186	U St., between Lincoln Road and 1st St., Todd, Summit to 1st St.	230.00	10	70.53	228.36	.....	298.89
187	Todd Pl., between 1st St. and Summit Pl.	219.40	10	71.09	193.89	.....	264.98
188	Todd Pl. NE., between 1st St. and Summit Pl.	200.00	10	49.31	206.26	.....	255.57
189	U St. NE., between 1st St. and Summit Pl.	319.50	10	80.14	268.77	.....	348.91
190	Webster St. NW., between 7th and 8th Sts.	36.65	10	9.36	31.69	.....	41.05
191	do.	124.00	10	26.96	113.44	.....	140.40
192	19th St., between Kenyon and Lamont Sts. NW.	80.60	18	88.39	181.12	19.40	288.91
193	Longfellow St., between Colorado Ave. and 13th St.	510.00	12	158.92	696.88	3.15	858.95
194	Kenyon St. NW., between Warder St. and Georgia Ave.	67.80	12	41.76	91.87	9.37	143.00
195	Upshur St., between New Hampshire Ave. and 5th St., outlet.	214.50	12	75.74	217.70	.....	293.44
196	Adams Mill Road, Quarry Road, and Ontario Road.	258.00	8	62.47	251.20	.....	313.67
197	Aspen St., between Blair Road and 4th St. NW.	516.50	12	136.45	400.27	19.95	556.67
198	Aspen St., between 4th and 5th Sts. NW.	531.00	12	162.06	529.74	.....	691.80
199	Aspen St., between 5th and 6th Sts. NW.	432.50	12	132.94	330.25	.....	463.19
200	5th St. NW., between Aspen and Butternut Sts.	257.47	10	45.99	308.39	.....	354.38
201	6th St. NW., between Aspen and Butternut Sts.	247.00	10	54.84	334.89	.....	389.73
202	East side of 15th St. NE., between C and D Sts.	415.80	12	137.54	373.93	.....	511.47
203	13th St. NW., between Shepherd and Randolph Sts.	340.30	12	94.16	337.19	.....	431.35
204	12th St. NE., between Shepherd St. and Michigan Ave.	449.00	12	183.20	357.36	.....	540.56
205	Conduit Road north of V St.	15.00	15	48.08	92.70	.....	140.78
206	15th St., between Euclid and Fulton Sts.	28.40	12	71.71	267.22	.....	338.93
207	Jackson St. NE., between 20th and 22d Sts.	117.88	12	46.15	132.28	.....	178.43
208	17th St. NE., between E St. and Eames Pl.	260.00	12	89.63	241.51	.....	331.14
209	12th St. NW., between M and N Sts.	238.00	12	112.37	284.52	12.26	409.15
210	Massachusetts Ave. NW., between Sheridan Circle and Decatur Pl.	25.00	12	8.03	37.50	21.45	66.98
211	Perry St. NE., between Bunker Hill Road and 12th St.	546.90	10	143.03	449.77	.....	592.80
212	1st St. NW., between Whittier and Van Buren Sts.	247.50	10	55.38	298.19	.....	353.57
213	Perry St. NE., between 12th and 13th Sts.	168.00	10	60.17	155.55	.....	215.72
214	Gresham Pl., between Georgia Ave. and 5th St. NW.	773.80	12	139.86	526.95	.....	666.81
215	Alley of square 455—F and G, 6th and 7th Sts. NW.	260.70	15	226.19	455.15	363.07	1,044.41
216	do.	144.30	15	327.49	380.85	363.06	1,071.40
217	14th St. and South Carolina Ave. SE.	15.00	18	9.88	16.49	.....	26.37
218	South Carolina Ave. SE., between 14th St. and Kentucky Ave.	493.50	15	273.53	511.88	.....	785.41

TABLE NO. 4.—Sewer construction under assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaying.	
219	Kentucky Ave. SE., between South Carolina Ave. and B St.	153.70	12	\$44.15	\$131.24	-----	\$175.39
220	14th St., between South Carolina Ave. and B St. SE.	147.00	12	36.41	144.95	-----	181.36
221	9th St., between Barry Pl. and Euclid St.	420.57	12	124.28	694.30	-----	818.58
222	Randolph St., between Georgia Ave. and 8th St. NW.	97.50	10	22.50	138.51	\$3.48	164.49
223	12th St. NE., between Otis and Perry Sts.	90.00	10	18.99	66.86	19.43	105.28
224	Perry St. NE., between 12th and 13th Sts.	519.25	10	147.65	528.11	-----	675.76
225	Keokuk St. NW., between 41st and 42d Sts.	240.70	10	73.07	234.55	31.30	338.92
226	10th St. NE., between Otis and Newton Sts.	197.00	10	44.31	178.97	-----	223.28
227	18th St. SE., between Minnesota Ave. and S St.	70.00	12	18.82	43.22	-----	62.04
228	Minnesota Ave. SE., between White Pl. and 23d St.	75.00	10	19.57	66.21	-----	85.78
229	Livingston St. NW., between Connecticut Ave. and 39th St.	194.20	12	54.52	297.37	-----	351.89
230	McKinley St. NW., between 39th St. and Belt Road.	243.00	12	25.47	271.75	-----	297.22
231	Michigan Ave. NE., between 10th and 9th Sts.	328.30	10	91.42	325.18	1.43	418.03
232	Michigan Ave. NE., between 9th St. and Brookland Ave.	476.70	10	208.85	616.34	77.12	902.31
233	40th St. and Nebraska Ave. NW.	255.00	12	118.45	312.75	-----	431.20
234	Ives Pl. SE., between 14th and 15th Sts.	36.00 208.00	18 12	106.04	289.28	-----	395.32
235	Rittenhouse St. NW., between Broad Branch Road and 33d St.	595.00	10	189.69	647.20	-----	836.89
236	10th St. NE., between Jackson and Kearney Sts.	130.00	15	81.22	216.14	-----	297.36
237	13th St. NE., between Newton and Otis Sts.	224.50	10	88.18	409.58	-----	497.76
238	Sherman Ave. NW., between Barry Pl. and Euclid St.	342.50	15	188.19	625.76	53.52	867.47
239	do.	100.43	15	33.03	144.29	53.52	230.84
240	Alabama Ave. SE., between 10th and 11th Pls.	25.00	10	7.49	27.84	-----	35.33
241	K. St. NW., between 14th and 15th Sts.	53.58	12	14.87	84.81	-----	99.68
242	Shepherd St. NE., between 12th and 11th Pls.	341.50	18	254.13	550.34	-----	804.47
243	Shepherd St. NE., between 11th Pl. and 10th St.	219.50	10	48.52	350.73	-----	399.25
244	12th St. NE., between Shepherd St. and Sigsbee Pl.	195.00	21	194.26	271.04	-----	465.30
245	8th St. NE., between I and K Sts., alley, square 888	8.80 141.80 201.40	15 12 10	129.54	452.36	6.21	588.11
248	Franklin St. NE., between 24th and 26th Sts.	6.00	10	2.54	12.28	-----	14.82
249	Wisconsin Ave. and 35th St. NW.	154.10	10	61.00	289.25	36.44	386.69
250	Massachusetts Ave., between Wisconsin Ave. and Jewett St.	200.60	10	61.31	279.66	-----	340.97
251	Wisconsin Ave. NW., between Garfield St. and Massachusetts Ave.	379.40	12	122.15	579.80	49.99	751.94
252	Otis St. NE., between 10th and 12th Sts.	319.00	15	91.62	308.34	-----	399.96
253	Rhode Island Ave., between 18th and 20th Sts.	175.00	10	39.76	181.77	-----	221.53
254	Buchanan St. NW., between 15th St. and Piney Branch Road.	342.38	15	162.77	508.27	-----	671.04
255	Irving St., between 17th and 18th Sts., and in 18th St.	251.00	10	65.96	214.84	-----	280.80
256	12th St. NE., between Otis and Perry Sts.	214.80	10	66.57	155.54	2.63	224.74
257	Michigan Ave. NE., between Brookland Ave. and 7th St.	200.00	10	62.18	162.11	75.68	299.97
258	In alley of square 4070.	289.00	12	87.61	385.98	-----	473.59

TABLE NO. 4.—Sewer construction under assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
259	Varnum St. NW., between 7th and 8th Sts.	<i>Lin. ft.</i> 37.00	<i>Inches.</i> 10	\$11.00	\$50.55		\$61.55
260	30th St. SE., between Q and S Sts.	305.60	10	74.38	394.91		469.29
261	Staples St. NE., between Florida Ave. and Neal St.	461.48	15	212.19	624.77		836.96
262	Longfellow St., between 14th and 16th Sts. NW.	124.32 597.00	12 12				
263	Perry Pl. west of 14th St. NW.	28.60	21	223.38	927.44	\$97.43	1,248.25
264	20th St. NW. between Belmont and Calvert Sts.	269.76	12	121.26	365.48		486.74
265	Webster St. NW., between 7th and 8th Sts.	109.30	10	28.04	135.95		163.99
266	Sherman Ave. NW., between Barry and Euclid Sts.	74.00	10	17.91	99.97		117.88
267	Rhode Island Ave., between 2d and 3d Sts. NE.	327.23	15	162.65	543.50	53.52	759.67
268	Rhode Island Ave., between 2d and Summit Sts. NE.	444.03	12	158.54	525.07		683.61
269	Raleigh St., eastward from Trenton Pl.	224.27	10	81.58	251.72		333.30
270	Ashmead St., between 20th St. and Connecticut Ave.	460.00	8	102.38	487.42		589.80
271	Water St. NW., between 21st and 22d Sts.	277.37	18	261.08	980.86	46.15	1,288.09
272	17th St. NE., between East Capitol and A Sts.	473.50	12	172.64	423.96		596.60
273	17th St. NE., between Brentwood Road and Rhode Island Ave.	232.00	10	54.88	308.12		363.00
274	Rhode Island Ave., between 17th and Franklin Sts.	501.20	10	188.36	682.35		870.71
275	Raum St., between Montello St. and Trinidad Ave. NE.	499.50	10	149.79	526.76		676.55
276	Trinidad Ave., between Raum and Queen Sts. NE.	249.70	15	184.98	566.61		751.59
277	Jefferson St. NW., between 9th and 8th Sts.	469.75	12	157.28	599.19		756.47
278	Q. St. NW., between 22d and 23d Sts.	147.00	10	56.51	228.55		285.06
279	Georgia Ave. NW., between Delafield and Decatur Sts.	27.50	10	7.52	30.13		37.65
280	Decatur St. NW., between Georgia Ave. and 9th St.	160.50	15	106.63	550.57	43.03	700.23
281	Decatur St. NW., between 9th and 8th Sts.	463.40	15	236.07	775.45		1,011.52
282	Decatur St. NW., between 8th St. and Illinois Ave.	490.00	15	246.27	558.11		804.38
283	Illinois Ave. NW., between Decatur and Buchanan Sts.	269.70	15	139.16	234.75		373.91
285	24th St. NW., between California St. and Tracy Pl.	109.50	12	29.84	67.82		97.66
286	Tracy Pl., between 24th and 23d Sts. NW.	261.50	18	173.79	532.15		705.94
287	do.	288.50	15	150.74	264.82		415.56
288	19th St. NW., between Cedar Pl. and T St.	278.00	15	150.08	406.75	2.10	558.93
289	Georgia Ave. NW., between Sheridan and Tuckerman Sts.	38.00	12	10.24	50.51	13.46	74.21
290	Georgia Ave. NW., between Rittenhouse and Sheridan Sts.	175.00	12	72.31	280.29	62.87	415.47
291	Georgia Ave. NW., between Quackenbos and Rittenhouse Sts.	430.80	12	136.43	560.71	159.15	856.29
292	48th St., between Brandywine and Chesapeake Sts. NW.	390.20	12	120.80	470.25	52.98	644.03
293	48th St., between Chesapeake and Davenport Sts. NW.	470.00	12	143.36	780.23		923.59
294	Davenport St., between 47th and 48th Sts. NW.	431.00	12	171.80	702.76	65.59	940.15
295	Hobart Pl. between Georgia and Sherman Aves. NW.	206.00	10	49.77	181.97		231.74
296	Canal St. SW., between 1st and 2d Sts.	105.80	12	31.43	173.19		204.62
297	R. St. NW., between Avon Pl. and 31st St.	180.70	12	81.67	254.23		335.90
298	Elm St. at 5th St. NW.	202.00 25.00	12 12	77.09 28.70	244.60 104.01	53.01 40.88	374.70 173.59



TABLE NO. 4.—Sewer construction under assessment system from appropriation for assessment and permit work for the fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
299	Conduit Road, between New Cut Road and U St. NW.	Lin. ft. 618.00 22.00	Inches. 12 36 by 36	\$212.63	\$637.33	.....	\$849.96
300	10th Pl. SE., between Alabama Ave. and Savannah St.	533.30	10				
301	Brothers Pl. SE., between Waciarik St. and Esther Pl.	410.40	10	155.07	434.65	.....	589.72
302	7th St. NW., between G and H Sts.	34.30 55.25	15 12	139.96	507.36	.....	647.32
303	W St. NW., between Massachusetts Ave. and 32d St.	279.30	12	51.90	122.24	\$65.98	240.12
304	E St. NW., between 20th and 21st Sts.	155.00	10	206.66	441.00	.....	647.66
305	Corcoran St., between 13th and 14 Sts. NW.	41.00 49.00	12 12	41.62	155.32	46.78	243.72
306	L St. SE., between 3d and 4th Sts.	21.00	10	23.76	48.79	11.92	84.47
308	Kalorama Road NW., between Thornton Pl. and 23d St.	60.00	12	37.08	109.94	14.13	161.15
309	Sherman Ave., between Barry Pl. and Euclid St.	150.45	12	28.90	78.76	.....	107.66
310	20th St. NW., north of Park Road.	44.00	10	79.24	283.53	.....	362.77
311	In Sherrier Pl., east of Cushing Pl.	94.00	15	9.60	66.50	.....	76.10
312	In Sherrier Pl., between Cushing and Dora Sts.	569.90	12	59.14	102.75	.....	161.89
313	In Sherrier Pl., between Dora and Edmonds Sts.	603.90	12	173.80	796.17	.....	969.97
314	In Sherrier Pl., west of Edmonds Pl.	( <sup>1</sup> )	.....	178.84	359.17	.....	538.01
315	16th St. SE., between Good Hope Road and U St.	159.00	10	21.12	.....	.....	21.12
316	1st St. NW., between Seaton Pl. and T St.	171.75	12	62.55	199.63	10.31	272.49
317	Randolph St., between 13th and 14th Sts. NE.	170.00	10	79.46	313.22	20.22	412.90
318	22d St., between R St. and Ridge Pl. SE.	156.30	10	39.85	274.89	.....	314.74
319	Ridge Pl. eastward from 22d St. SE.	405.00	10	48.37	197.91	.....	246.28
322	22d St. NE., between Channing and Bryant Sts.	378.40	12	109.88	292.82	.....	402.70
323	24th St. NE., between Douglas and Everts Sts.	298.00	10	112.02	716.33	46.98	875.33
324	14th St. SE., between L and K Sts.	108.60	10	84.76	417.64	59.63	562.03
325	do.	105.00	10	36.74	52.99	.....	89.73
326	Florida Ave. NW., between 7th and 8th Sts.	113.00	12	36.59	97.44	.....	134.03
327	Orren St. NE., between Florida Ave. and Morse St.	337.20	15	51.55	141.55	39.87	232.97
328	Bryant St. NE., between 22d St. and 21st Pl.	286.00	12	171.35	531.44	.....	702.79
330	Orren St. between Morse and Neal Sts. NE.	240.30	12	92.24	307.40	.....	399.64
331	Orleans Pl. NE., between 6th and 7th Sts.	24.00	12	75.83	226.68	.....	302.51
332	Bryant St. NE., between 21st Pl. and 20th St.	295.90	12	6.01	19.69	6.00	31.70
333	Bryant St. NE., between 20th St. and 19th Pl.	294.70	12	91.05	339.39	.....	430.44
334	Pennsylvania Ave. SE., between Southern Railroad and L'Enfant Square.	70.00	12	98.94	410.60	.....	509.54
335	Bryant St. NE., between 19th and 18th Pls.	128.00	10	40.14	136.38	.....	176.52
Total.....		59,270.16	.....	22,453.76	74,262.52	3,784.14	100,500.42

<sup>1</sup> Work suspended.

TABLE No. 5.—*Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1913.*

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Materials.	Labor.	Repaving.	
		<i>Feet.</i>	<i>Inches.</i>					
500	Massachusetts Ave. NW., between Observatory Circle and Wisconsin Ave.	81.00 33.00 66.00	10 12 15	6	\$101.95	\$169.69	\$31.91	\$303.58
501	Macomb St. and Ross Pl. NW.	87.00	12	3	75.37	153.31	.....	228.68
503	19th St. and Pennsylvania Ave. NW., southwest corner	27.00	10	1	22.73	61.71	.....	84.44
504	North side Pennsylvania Ave., eastward from 6th St.	( <sup>1</sup> )	.....	.....	67.03	182.12	.....	* 249.15
505	In 6th St., crossing Pennsylvania Ave. NW.	117.00	12	.....	62.46	234.00	.....	296.46
506	Crossing Pennsylvania Ave. at 4 <sup>1</sup> / <sub>2</sub> St. NW.	114.00	12	.....	67.90	316.19	.....	* 384.09
508	14th and Ingraham Sts. NW.	36.00 60.00 12.00	10 12 10	2 2	29.11 48.66 84.72	129.33 129.76 218.85	..... ..... 2.66	158.44 ..... 306.24
511	Crossing Pennsylvania Ave. in line of 3d St. NW.	114.00	12	.....	73.03	459.60	.....	532.63
512	Crossing Florida Ave. at 15th, and east in Florida Ave.	40.00 85.00 45.00	24 21 18	.....	231.48	586.89	42.75	861.12
513	New Hampshire Ave. and T St. NW.	57.00	10	1	31.75	85.25	.....	117.00
514	Seventh and I Sts. SW.	( <sup>4</sup> )	.....	.....	337.38	806.85	( <sup>5</sup> )	1,144.23
515	13th and Belmont Sts. NW.	54.00	10	2	48.66	129.76	13.00	1,191.42
516	M and Robinson Sts. SW.	42.00	12	1	24.46	72.75	.....	97.21
517	Belmont St. NW., between 14th and 15th Sts.	24.00	10	2	29.51	126.24	23.81	179.56
518	V St. NW., between 16th and 17th Sts.	252.50	18	.....	282.43	910.90	59.24	1,252.57
519	Northwest and northeast corners 18th St. and Summit Pl.	66.00	10	2	50.22	93.31	.....	143.53
520	S St. NW., between 7th and 8th Sts.	49.00	8	.....	20.10	74.22	4.05	98.37
521	15th and K Sts. NW.	27.00	12	1	38.61	98.92	.....	137.53
522	11th St. SE., between D St. and South Carolina Ave.	21.00 48.00	12 8	.....	16.45	181.15	7.65	205.25
523	Q St. NW., between 30th and 31st Sts.	252.00	18	.....	206.25	475.98	77.01	759.24
524	12th St. NW., between S and T Sts., also in alley of square 275.	415.00 40.00	12 12	.....	210.77	738.36	171.65	1,120.78
525	14th St. NW., just south of Arkansas Ave.	21.00	18	1	76.61	235.06	7.38	319.05
526	Northeast corner New Jersey Ave. and D. St. NW.	24.00	12	1	23.47	93.56	55.40	172.43
527	South side of Q St., between 30th and 31st Sts.	9	12	1	12.87	35.15	.....	48.02
528	Northwest corner Columbia Road and Park Pl. NW.	21.00 9.00 18.00 15.00 102.00	10 18 15 12 12	1 5	16.69 102.62	54.81 233.17	..... .....	71.50 335.79
530	Northeast and southeast corners 7th and Taylor Sts. NW.	57.60 71.80 15.00	18 15 12	2	101.23	299.61	.....	400.84
531	Columbia Road, between Georgia Ave. and Park Pl. NW.	45.00	10	2	35.54	98.50	.....	134.04
533	Maryland Ave and 2d St., southwest and southeast corners	39.00 21.00 69.00	10 15 12	1 3	27.43 96.50	90.87 182.63	5.15 .....	123.45 279.13
534	34th and Newark Sts. NW.	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Reported, 1912.<sup>2</sup> Completion of job 604, 1912.<sup>3</sup> Completion of job 594, 1912.<sup>4</sup> Regulator chamber.<sup>5</sup> Repaving charge not reported by surface division.

TABLE NO. 5.—*Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1913—Continued.*

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Materials.	Labor.	Re-pav-ing.	
		<i>Feet.</i>	<i>Inches.</i>					
535	Kansas Ave. at Varnum and 9th Sts. NW.....	45.00	15	4	\$87.66	\$222.06	\$27.32	\$337.04
536	14th St. SE., between M St. and Anacostia River.....	15.00	10					
537	Alley of square 2897, south of Princeton St., between Georgia and New Hampshire Aves.....	16.00	66	.....	61.45	200.57	.....	262.02
538	19th St., between New Hampshire Ave. and M St.....	126.40	15	}	112.44	314.32	.....	426.76
	.....	15.00	12					
539	Alley of square 3040.....	27.00	12	1	17.80	42.57	.....	60.37
540	19th St. NE., from C to D Sts.....	15.50	8	.....	21.39	39.86	13.40	74.65
541	Massachusetts Ave., 11th St., Massachusetts Ave., and L St. NW.....	140.00	54	}	288.76	1,115.67	.....	1,404.43
	.....	37.00	154					
542	Connecticut Ave., between N. St. and Dupont Circle NW.....	129.00	10	2	54.31	118.90	.....	173.21
543	3d St. and Pennsylvania Ave. NW.....	400.00	15	.....	248.30	643.80	147.51	1,039.61
544	Northwest corner of 17th and E Sts. SE.....	8.00	24 by 36	(2)	5.17	16.50	.....	21.67
546	19th St. and Pennsylvania Ave. NW.....	12.00	10	1	22.02	61.22	.....	83.24
547	S St., between 17th and 16th Sts. NW.....	.....	(3)	.....	24.54	35.00	15.98	75.52
548	5th and V Sts. NE.....	550.00	10	.....	294.53	703.63	88.79	1,086.95
549	Hobart Pl. and Sherman Ave. NW.....	72.00	12	3	66.23	148.06	.....	214.29
550	L St. SW., at 4 1/2 St.....	21.00	18	1	20.72	61.92	.....	82.64
551	11th St. NW, between Monroe and Otis Sts.....	77.00	18	.....	58.52	271.17	70.48	400.17
552	19th St. NW., between L and M Sts.....	18.00	12	1	22.28	60.11	2.94	85.33
554	2d and N Sts. SW.....	300.00	12	}	133.70	742.02	84.79	960.51
555	Alley, square 357.....	48.00	10					
556	15th and W, 16th and V Sts. SE.....	.....	(4)	.....	21.67	34.93	.....	56.60
557	Pennsylvania Ave., between 15th and L'Enfant Circle.....	.....	(4)	.....	21.07	70.88	.....	91.95
558	Alley of square 623.....	60.00	10	2	51.45	121.32	.....	172.77
559	9th and Varnum Sts. NW., southeast corner.....	45.00	12	1	24.48	77.99	2.50	104.97
560	10th and Jackson Sts., northeast corner.....	325.20	12	.....	162.05	587.17	152.86	902.08
561	19th and Gales Sts. NE., northwest corner.....	12.00	12	1	16.01	55.25	.....	71.26
562	5th St. NE., north of T St.....	36.00	12	1	24.18	97.19	.....	121.37
563	4 1/2 St. SW., south of Maine Ave.....	27.00	12	1	21.69	75.56	.....	97.25
564	1st St. and Todd Pl. NE.....	30.00	12	1	27.28	73.25	.....	100.53
565	Line of 13th St., crossing E St. NW.....	100.00	12	.....	69.12	84.85	90.21	244.18
566	H St. NW, between 11th and 12th Sts.....	80.70	18	}	80.29	302.51	40.86	423.66
567	Vermont Ave. and V St. NW.....	27.30	12					
568	Crossing 3d St. NE., at R St.....	66.00	10	2	40.24	103.43	.....	143.67
569	Crossing 3d St. NE., at T St.....	52.00	18	.....	66.38	184.49	6.93	257.80
570	Crossing 3d St. NE., in line of Seaton Pl.....	64.50	12	.....	43.32	179.25	.....	222.57
571	21st St. NW., between N and O Sts.....	70.00	15	.....	54.03	212.94	.....	266.97
573	20th S. NW., between N St. and Sunderland Pl.....	.....	(5)	.....	17.31	31.49	11.90	60.70
574	L St., between 14th St. and Vermont Ave. NW.....	12.00	12	1	18.70	141.52	11.09	171.31
575	14th and Madison Sts. NW., northwest corner.....	70.90	15	}	127.11	394.97	93.60	615.68
	.....	185.70	12					
	.....	21.00	10	1	35.67	71.09	9.14	115.90

1 Arch.

2 Completion of contract 5110 "D."

3 Manhole.

4 Gutter drop.

TABLE NO. 5.—Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Materials.	Labor.	Repaving.	
576	Northwest corner Kendall St. and Capital Ave.	Feet. 43.00	Inches. 12	1	\$28.05	\$50.92	\$2.62	\$81.59
578	8th and Water Sts. SW., northeast corner.			1	16.48	26.13	12.86	55.47
579	8th and Water Sts. SW.	98.50	12		43.34	96.11	44.26	183.71
580	3d and R Sts. NE., southwest corner.	15.00	10	1	31.27	68.11		99.38
581	Randolph St. NW., crossing 1st St.	27.00	21		47.11	139.60	22.54	209.25
582	Davis St. and Observatory Circle NW.	21.00	12	1	23.13	87.02		110.15
583	West side 4th St. E., crossing East Capitol St.	137.10 35.30	15 12		115.58	322.12	29.93	467.63
585	15th St., crossing Church St. NW.	44.70	15		17.86	62.81	8.33	89.00
586	K St., between North Capital and 1st Sts. NE.	343.00	12		143.51	523.53	62.11	729.15
587	1st St. NW., between P and Q Sts.	216.50	12		99.77	413.45	4.24	517.46
588	do.	228.00	12		203.05	527.89		730.94
589	Florida Ave. NW., between Champlain and Ontario Sts.	20.00 47.00	18 12		48.96	141.14	25.00	215.10
590	10th and Kearny Sts. NE., northwest corner.	24.00	10	1	20.67	64.37		85.04
593	7th St. NW., crossing H St.	55.00	12		34.02	169.92	28.13	232.07
594	Rhode Island Ave. NW., between 5th and 6th Sts.	189.50	12		98.54	328.65		427.19
595	Walbridge Pl. and Park Road NW.	87.00	12	2	54.69	140.14	(1)	194.83
597	E St. NW., between 2d and 3d Sts.		(2)		13.42	40.00	9.98	63.40
598	Avenue of the Presidents and Harvard St. NW.	33.00	10	1	22.96	82.06		105.02
599	7th St. SE., between I St. and Virginia Ave.	115.90	12		89.37	283.38	24.83	397.58
601	B St. NE., between 3d and 4th Sts.	311.60	12		126.04	380.10	87.45	593.59
602	8th St. SW., sewer outlet in Water St.		(2)	(2)	48.01	175.51		223.52
603	C St. SW., between 13th and 13½ Sts.	117.00	12		65.15	227.61	15.85	308.61
604	Northwest corner Columbia Road and Harvard St.			1	31.03	85.04		116.07
605	Water St. SW., between M and N Sts.	367.00	10		147.43	404.19	230.47	782.09
606	G St. SW., between 9th and 10th Sts.		(1)			18.00		18.00
607	do.		(1)		74.84	294.33		369.17
	Total.	9,029.20			6,891.95	21,038.06	2,047.91	29,977.92

1 Repaving charge not yet reported by surface division.

2 Manhole.

3 Tide gate.

4 Work to be completed in 1914.

TABLE NO. 6.—Sewer construction from the appropriation for suburban sewers, fiscal year ended June 30, 1913.

Order No.	Location.	Length. Feet.	Size. Inches.	Character of work.	Cost of—			Total cost.
					Material.	Labor.	Reparing.	
800	Massachusetts Avenue Heights.....			Storm-water diversion and Inlet.	\$15.37	\$99.78	.....	\$115.15
801	Irving Street NW., between Eleventh and Twelfth Streets <sup>1</sup> .....	9.50	12	Shaft.	19.67	51.55	.....	71.22
802	Massachusetts Avenue, between Arizona Avenue and Forty-second Street. <sup>1</sup>				41.31	27.73	.....	69.04
803	do., in line of Rock Creek Drive at Parked Highway	120.30	18		7.44	5.75	.....	13.19
804	Fifth Street NW., south from Hobart Place	70.50	21		94.11	23.28	.....	307.39
805	Kalorama Road, Champlain Avenue to Eighteenth Street NW.	250.00	24		111.27	174.44	.....	285.71
806	do., Cedar Street, between Fourth Street and Baltimore & Ohio R. R.	33.00	21		298.69	598.36	\$196.77	1,093.82
807	do., Cedar Street, between Fourth Street and Baltimore & Ohio R. R.	12.00	15		102.45	236.86	.....	339.31
808	Arkansas Avenue, between Phney Branch trunk sewer and Sixteenth Street.	36.00	12				.....	
813	Chicago Street trunk sewer to bulkhead line	207.60	24		328.49	482.47	8.14	817.10
814	In Sixteenth Street extended in line of Spring Road	175.00	2	Timber platform.	92.36	90.67	.....	183.03
815	Kansas Avenue at Varnum and Ninth Streets NW	63.00	45	Iron pipe.	68.87	98.11	.....	179.60
816	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	2.30	10	15-foot bell chamber.	216.39	905.85	24.02	1,146.26
817	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	136.90	36		208.80	873.20	1.31	1,083.31
818	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	2.00	12		173.77	739.52	44.80	1,018.09
819	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	132.00	36		170.62	813.73	.....	984.35
820	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	132.00	36	Extending platform.	92.02	63.15	.....	157.17
821	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	132.00	36		222.41	442.42	2.10	668.93
822	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	204.00	12		108.61	263.61	.....	403.22
823	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	181.00	8		257.61	136.46	.....	394.07
824	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	151.20	21		171.14	339.49	.....	510.63
825	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	308.40	21		340.14	612.33	.....	952.02
826	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	125.28	36		132.10	974.93	.....	1,107.03
827	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	119.28	36		108.71	894.43	.....	1,003.14
828	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	139.80	15	Regulator chamber.	547.41	575.02	.....	1,122.43
829	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	139.80	15	2 manholes	50.99	184.24	.....	235.23
830	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	23.00	54 by 75	Concrete apron.	81.39	84.87	.....	166.26
831	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	23.00	54 by 75	Concrete apron.	60.31	301.85	.....	362.16
832	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	36.20	12	Retaining wall.	27.23	45.75	.....	72.98
833	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	36.20	12	Retaining wall.	10.52	45.75	.....	56.27
834	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	41.30	15	Retaining wall.	19.77	72.87	8.10	100.74
835	do., Bunker Hill Road, between Queen Chapel Road and Twentieth Street.	41.30	15	Retaining wall.	19.77	72.87	8.10	100.74

<sup>1</sup> Continuation of 1912 work.

TABLE No. 6.—*Sewer construction from the appropriation for suburban sewers, fiscal year ended June 30, 1913—Continued.*

Order No.	Location.	Length.	Size.	Character of work.	Cost of—			Total cost.
					Material.	Labor.	Repaying.	
		<i>Feet.</i>	<i>Inches.</i>					
826	Bunker Hill Road, between Queen Chapel and Sargent Roads.	35.28	36	1 manhole.	\$42.61	\$254.25	\$16.35	\$313.21
827	Ninth Street N.W., between Barry Place and Euclid Street.	9.52			9.52	33.75		43.27
828	Taylor Street, between Kansas Avenue and Thirteenth Street.	185.50	24 by 30		157.42	393.10		550.52
829	Thirteenth Street, between Taylor and Upshur Streets.	351.50	24 by 36		212.26	982.90		1,195.28
830	Between bulkhead lines of Anacostia River.	83.20	48 by 48		228.31	803.14		1,031.45
831	Parked Highway and Thirtieth Street N.W.			Stream crossing No. 2	63.81	374.41		438.22
832	do.			Stream crossing No. 3	68.89	300.52		369.41
833	Zoological Park, between Adams Mill Road and Kenyon Street.	336.25	30		313.24	1,628.21	23.80	1,965.25
834	Connecticut Avenue, between Northampton and Oliver Streets.	145.00	10		52.62	178.84		231.46
835	From Chesapeake & Ohio Canal to Potomac River, line of Ashby St.	506.00	12		119.24	529.60		648.84
836	Rock Creek Valley, southward from Military Road.	500.00	18		480.11	881.64		1,361.75
837	do.	500.00	18		346.27	964.01	38.32	1,348.60
838	Alley of square, Lincoln Road and First R. and S Streets.	513.30	18	2 manholes raised.	378.16	997.32	263.19	1,638.67
839	Upshur Street, west of Georgia Avenue N.W.	43.60	21		15.22	25.50		40.72
840	Ninth and Taylor Streets N Street N.W.	15.25	18		45.17	120.75	4.00	169.92
841	Georgia Avenue and Washington Railway & Electric Co.'s tracks, between Sheridan Place and Chain Bridge.	674.00	15		12.86	29.63	2.66	45.15
842	Chain Bridge, east of Washington Railway & Electric Co.'s tracks and in parcel 11/22.	370.20	15		329.82	870.92		1,200.74
843	Cool Spring Road, between Twenty-first and C Streets.	18.00	10	2 manholes.	224.31	540.16		764.47
844	Rosedale Street, between Sixteenth and Seventeenth Streets N.E.	15.00	12		22.17	39.50		61.67
845	Georgia Avenue, between Dahlia and Dogwood Streets.	177.00	42 by 48		25.47	63.76		89.23
846	Georgia Avenue, between Dogwood and Elder Streets.	134.60	42 by 48		172.86	851.19	59.89	1,083.94
847	Georgia Avenue, between Elder and Fern Streets.	128.30	42 by 48		172.89	912.04	46.00	1,135.93
848	Twenty-first Place, between Bryant and Channing Streets N.E.	175.00	42 by 48		168.87	743.32	44.00	956.19
849	Twenty-first Street N.E., between Bryant and Channing Streets.	378.00	10		139.32	139.28	(1)	180.71
850	Yuma Street, between Forty-first and Forty-second Streets.	(1)	10	1 manhole.	95.12	465.02	(1)	560.14
851	Nineteenth Place, between Bryant and Channing Streets.				18.99	27.64		46.63
852	Total.	8,315.11			29.08	261.21		290.29
					8,077.27	24,479.21	796.07	33,352.55

1 Repaving not reported by surface division.

2 To be completed in 1914.

TABLE NO. 7.—Sewer construction under whole-cost system from miscellaneous trust funds deposits, fiscal year ended June 30, 1913.

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit. <sup>1</sup>	Cost of work. <sup>1</sup>	Amount returned. <sup>1</sup>	For whom done.
1000	Right of way lot 1, square 1937, and in Thirty-sixth Street.	Feet. 450.00	Ins. 12		(E) \$914.12	(E) \$914.12	(E) None.	Massachusetts Avenue Heights Syndicate.
1001	Parked Highway between Rock Creek Drive and Thirtieth Street.	629.70	15		(H) 1,750.00	(H) 1,712.25	(H) \$37.75	Do.
1002	Thirty-second Street, Woodley Road to Parked Highway.	342.00	15	11 basins constructed.	(L) 1,888.20	(L) 1,888.20	(L) None.	Do.
1003	Woodland Drive, Rock Creek Drive and Thirty-second Street.	{ 66.00 108.00 244.00 213.00	{ 12 15 12 15	{ 9 basins constructed. 12 basins constructed.	{ (L) (L) (L) (L)	{ (L) (L) (L) (L)	{ (L) (L) (L) (L)	{ Do. Do. Washington Land & Mortgage Co. Do.
1004	Third Street, between Longfellow Street and Shepherd Road.	374.20	12		(L) 1,440.00	(L) 1,440.00	(L) None.	Do.
1005	Shepherd Road, between Third Street and Kansas Avenue.				(L)	(L)	(L)	Do.
1006	Shepherd Road, between Kansas Avenue and Second Street.	143.80	12		(L)	(L)	(L)	Do.
1007	Sixteenth and U Streets NW.			Manhole raised.	50.00	34.30	15.70	Capital Traction Co.
1008	Delaware Avenue SW., between O and P Streets.	243.00	12		600.00	383.91	216.09	Washington Railway & Electric Co.
1009	King Place, between Hamlin and Fulton Streets NW.	200.00	8		200.00	191.74	8.26	Mary C. King.
1010	Eighth Street, between Allison and Buchanan Streets.	208.80	6		350.00	119.44	230.56	D. J. Partello.
1011	Klingbe Road, west of Thirty-second Street.	220.00	10		365.00	260.14	104.86	Massachusetts Avenue Heights Syndicate.
1012	Nebraska Avenue, between Broad Branch Road and square 2014, lot 1.	{ 681.00 358.40 117.60 38.00 24.00	{ 15 12 10 10 6		1,780.00	1,718.67	61.33	Fulton R. Gordon.
1013	Alley of square 515.				83.68	83.68	None.	Algernon R. McChesney.
1014	Eighth Street NW., between Allison and Buchanan Streets.				30.00	29.82	.18	P. A. Davis.
1015	In alley, through lot 636 of square 2673.	92.30	10		215.00	170.60	44.40	Chas. E. Wire.
1016	In alley of square 2673.	22.40	10		150.00	102.05	47.95	D. J. Partello.
1017	In alley of square 442.	50.00	10		125.00	121.14	3.86	Do.
1018	Thayer Street, south of Woodridge Street.	15.00	8		15.00	9.69	5.31	Ira J. Baker.
1019	Jenifer Street, between Thirty-ninth Street and Reno Road.	354.80	10		650.00	487.59	162.41	Thomas J. Fisher Co.
1020	Harrison Street, between Belt Road and Thirty-ninth Street.	791.00	12		725.00	504.95	220.05	Do.
1021	do.							Do.
1022	Cathedral Avenue, west of Thirty-second Street NW.	791.00	12		725.00	504.93	220.07	Massachusetts Avenue Heights Syndicate.
1023		403.60	12		(B) 664.19	(B) 664.19	(B) None.	Do.
1024								Do.

<sup>1</sup> Similar letters indicate those jobs constructed out of a single deposit.

TABLE No. 7.—*Sewer construction under whole-cost system from miscellaneous trust funds deposits, fiscal year ended June 30, 1913—Continued.*

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit. <sup>1</sup>	Cost of work. <sup>1</sup>	Amount returned. <sup>1</sup>	For whom done.
		<i>Feet.</i>	<i>Inch.</i>		(J) \$7,333.23	(J) \$7,333.23	(J) None.	Massachusetts Avenue Heights Syndicate.
1025	Woodland Drive, between Thirty-second and Garfield Streets.	334.60	10		(J)	(J)	(J)	Do.
1026	Garfield Street, between Woodland Drive and Thirty-second Street.	130.00	10		(J)	(J)	(J)	Do.
1027	Garfield Street, between Woodland Drive and Thirty-fourth Street.	333.50	10			14.50	\$0.50	Julius Wenig.
1028	Alley of square 515.	5.00	10		505.00	489.90	15.10	Appleton P. Clark, jr.
1029	Thirtieth Street, between Pennsylvania Avenue and E Street N.W.	154.00	12		1,200.00	981.79	218.21	Washington City Realty Co.
1030	In line of Potomac Avenue extended, between Nebraska Avenue and Sherrier Place.	539.70	18			392.79	57.21	Do.
1031	.....do.....	52.70	15		450.00	13.68	1.32	M. L. Hayes.
1032	King Place N.E., between Hamlin and Fulton Streets.	286.05	10		15.00			
1033	In alley of square 4217	5.00	8		50.00	46.52	3.48	Joseph C. Faris.
1035	Thirty-fourth Street, between Fulton and Garfield Streets.	491.00	18		(J)	(J)	(J)	Massachusetts Avenue Heights Syndicate.
1036	Thirty-fourth Street, between Garfield Street and Cathedral Avenue.	370.00	12		(J)	(J)	(J)	Do.
1037	Garfield Street, between Thirty-fourth Place and Thirty-fourth Street N.W.	320.40	15		(J)	(J)	(J)	Do.
1038	Thirty-fourth Place, between Garfield Street and Cathedral Avenue.	500.00	12		(J)	(J)	(J)	Do.
1039	Rock Creek Drive, between Parked Highway and Woodland Drive.	105.00	12		(F) 329.93	(F) 329.93	(F) None.	Do.
1040	Thirty-fourth Street N.W., between Observatory Circle and Fulton Street.	54.00	15		(J)	(J)	(J)	Do.
1041	West side Eleventh Street N.W., just north of E Street.	420.50	12	6 basins constructed.				Samuel J. Prescott Co. (Inc.).
1043	Park Drive, between Rock Creek Drive and Thirtieth Street.	96.00	12	Manhole abandoned.	25.00	5.90	19.10	Massachusetts Avenue Heights Syndicate.
1044	Thirtieth Street, between Parked Highway and Massachusetts Avenue.	33.00	15	8 basins constructed.	(H)	(H)	(H)	Do.
1045	In alley of square 3040	118.20	15	6 basins constructed.	387.13	353.97	33.16	Chas. E. Marlow.
1046	East edge square 1873, from Kanawha Street to Jocelyn Street.	27.30	8		65.00	64.44	.56	Harry Wardman.
1047	In alley of square 281	244.50	10		400.00	327.58	72.42	Jose Kaspar.
1048	In alley of square 281	8.50	12		15.00	14.94	.06	Massachusetts Avenue Heights Syndicate.
1049	In Thirty-third Place, north of Garfield Street.	275.00	10		(K) 4,437.49	(K) 4,437.49	(K) None.	Do.
1049	In Thirty-fourth Place, between Fulton and Garfield Streets.	340.50	15		(K)	(K)	(K)	Do.
1050	In Thirty-fourth Place, between Fulton and Massachusetts Avenue.	420.50	12		(K)	(K)	(K)	Do.





TABLE No. 7.—Sewer construction under whole-cost system from miscellaneous trust funds deposits, fiscal year ended June 30, 1913—Continued.

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit. <sup>1</sup>	Cost of work. <sup>1</sup>	Amount returned. <sup>1</sup>	For whom done.
1078	Thirty-fourth Place between Fulton and Massachusetts Avenue	<i>Feet.</i> 48.00	<i>Inch.</i> 12	3 basins constructed.....	(E)	(E)	(E)	Massachusetts Avenue Heights Syndicate.
1079	Water Street SW, just west of Potomac Avenue			Test holes.....	\$50.00	\$8.00	\$42.00	Washington Water Works.
1080	Thirty-second Street and Woodley Road NW, Woodland Drive			Basin covers.....	25.00	24.35	.65	E. G. Gummel.
1081	Garfield Streets	45.00	12	3 basins constructed.....	(B)	(B)	(B)	Massachusetts Avenue Heights Syndicate.
1082	Massachusetts Avenue Heights			Storm water diversion.....	(A) 1, 108.43	(A) 1, 069.81	(A) 38.62	Do.
1083	Parad Highway and Thirtieth Street NW			Stream crossing No. 2.....	(A)	(A)	(A)	Do.
1084	.....do.....			Stream crossing No. 3.....	(A)	(A)	(A)	Do.
1085	Corby Yeast Plant, Langdon.....	21.00	15		134.25	98.67	35.58	The Corby Co.
1086	Connecticut Avenue between Northampton and Oliver Streets.	15.00	8		365.00	282.26	82.74	Thomas J. Fisher Co.
1087	Thirty-fifth Street between Fulton and Garfield Streets.	24.00	10		(F)	(F)	(F)	Massachusetts Avenue Heights Syndicate.
1088	Montello Avenue between Queen and Raum Streets.	87.00	12	2 basins constructed.....	180.00	160.37	19.63	Julius Wahl.
1090	Observatory Circle between Massachusetts Avenue and Davis Street.	24.00	12	2 basins constructed.....	(G) 459.68	(G) 459.68	(G) None.	Massachusetts Avenue Heights Syndicate.
1091	Observatory Circle and Davis Street NW.....	21.00	12	.....do.....	(G)	(G)	(G)	Do.
1092	Observatory Circle between Thirty-sixth Street and Davis Street.	60.00	12	5 basins constructed.....	(E)	(E)	(E)	Do.
1094	Thirty-sixth Street and Davis Place NW.....	39.00	12	4 basins constructed.....	(D) 211.35	(D) 210.49	(D) .86	Do.
1095	Thirty-fifth Place and Edmunds Street NW.....	72.00	15	.....do.....	(E)	(E)	(E)	Do.
1096	Thirty-sixth Street between Edmunds and Fulton Streets NW.	12.00	12	2 basins constructed.....	(D)	(D)	(D)	Do.
1097	Right of way through lot 13, square 2689	162.50	10	1 basin.....	375.00	345.16	29.84	Harry Wardman.
1098	T Street NE, between Fourth and Fifth Streets	15.00	10		100.00	96.95	3.05	Washington Railway and Electric Co.
1099	Observatory Circle opposite Thirty-fourth Place, Place between Twenty-third and Twenty-fourth Streets NW	51.00	15	2 basins constructed.....	(G)	(G)	(G)	Massachusetts Avenue Heights Syndicate.
1800	North Capitol between G Street and Massachusetts Avenue.			Excess excavation.....	65.00	51.12	13.88	Berkeley L. Simmons.
1801	North Capitol between G Street and Massachusetts Avenue.	36.15	24		200.00	188.63	11.37	W. G. Cornell Co.
1802	Michigan Avenue			Outlet.....	(A)	(A)	(A)	Massachusetts Avenue Heights Syndicate.
1803	In alley of square 2933.....	160.70	10		290.00	267.56	22.44	Chas. H. Green.
1804	Michigan Street between North Capitol and First Street NW.	233.00	10		275.00	261.67	13.33	Washington Land & Mortgage Co.
1805	First Street NW, between Kennedy and Longfellow Streets.	198.00	10		300.00	267.94	32.06	Do.



TABLE No. 7.—*Sewer construction under whole-cost system from miscellaneous trust funds deposits, fiscal year ended June 30, 1913—Continued.*

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit. <sup>1</sup>	Cost of work. <sup>1</sup>	Amount returned. <sup>1</sup>	For whom done.
1833	Massachusetts Avenue Heights, near junction Thirtieth Street.	<i>Feet.</i>	<i>Inch.</i>	Stream crossing.....	\$800.00	\$229.02	\$570.98	Massachusetts Avenue Heights Syndicate.
1834	North side of Florida Avenue NE., between M and N Streets.	19.00	12	.....	100.00	92.27	7.73	Columbia Institute for the Deaf.
1835	Yuma Street between Forty-first and Forty-second Streets NW.	138.40	8	.....	325.00	271.45	53.55	N. Webster Chappell.
1836	Half of square 615.	6.00	10	.....	15.00	13.58	1.42	A. R. McChesney.
1837	Oak Street east of Center Street NW.	11.00	12	.....	20.00	13.05	6.95	George Koehler.
1838	Geranium Street between Twelfth and Thirteenth Streets.	509.62	12	.....	735.38	628.84	106.54	Lynchburg Investment Corporation.
1839	Geranium Street between Alaska Avenue and Thirteenth Street.	.....	( <sup>1</sup> )	.....	635.36	50.27	585.09	Do.
	Total.	25,345.77	.....	.....	53,305.16	49,544.13	4,761.03	

<sup>1</sup> Similar letters indicate those jobs constructed out of a single deposit.<sup>2</sup> Work incomplete.<sup>3</sup> To be completed in 1914.TABLE No. 8.—*Sewer construction from miscellaneous appropriations, fiscal year ended June 30, 1913.*

Order No.	Location.	Sewer laid.		Remarks.	Cost of—			Total cost.	Appropriations.
		Length.	Size.		Material.	Labor.	Contingencies.		
		<i>Feet.</i>	<i>Inches.</i>						
1101	Nineteenth and H Streets NW., southwest corner.	27.00	10	1 basin constructed....	\$16.95	\$76.15	\$4.66	\$97.76	Repairs to streets, 1913.
1102	Sixth and O Streets NW.....	.....	.....	1 basin rebuilt.....	18.89	64.31	4.16	87.36	Assessment and permit, streets, 1913.
1104	Eighteenth Street and Virginia Avenue NW., northwest corner.	.....	.....	.....do.....	18.71	32.63	2.56	53.90	Improvements and repairs, 1913, B Street and Virginia Avenue NW.
1105	Twenty second Street and Massachusetts Avenue NW.....	36.00	15	.....do.....	26.88	71.76	4.67	103.31	Repairs to streets, 1913.
1107	Entrance to Zoological Park.....	.....	.....	1 basin rebuilt; 2 basins abandoned.	92.20	126.29	10.94	229.43	Grading and improving entrance to Zoo Park.
1108	Quarry Road trunk crossing under Eighteenth Street NW.	78.00	29 by 48	{	177.24	774.09	47.14	998.47	Do.
1109	East end of reservation 28.....	54.00	24		1 basin rebuilt.....	35.59	104.43	7.00	147.02
		75.00	10						



TABLE NO. 8.—Sewer construction from miscellaneous appropriations, fiscal year ended June 30, 1913—(continued).

Order No.	Location.	Sewer laid.		Remarks.	Cost of—			Total cost.	Appropriations.
		Length.	Size.		Material.	Labor.	Contingencies.		
		<i>Feet.</i>	<i>Inch.</i>						
1160	Third Street between R and T Streets NE.....	48.00	10	7 basins constructed....	\$126.84	\$233.94	\$18.04	\$378.82	Repairs to streets, 1913.
1161	Marion and Q Streets NW, southeast corner.....	21.00	10	1 basin constructed....	15.78	47.07	3.14	65.99	Do.
1162	Second and R Streets, Third and H Streets NW.....	21.00	10	2 basins constructed....	35.98	93.08	6.45	135.51	Do.
1163	Fourth and Beaton Streets, Fourth and S Streets NE.....	70.00	10	4 basins rebuilt.....	75.07	143.62	10.93	229.62	Do.
1164	New Jersey Avenue and H Street NW., south-west corner.....	31.00	10	1 basin constructed....	20.15	42.81	3.14	66.10	Do.
1165	New Jersey Avenue and Massachusetts Avenue NW, northeast corner.....	.....	.....	1 basin adjusted.....	.23	6.51	.34	7.08	Do.
1166	East Capitol Street from First Street to Eleventh Street NE.....	45.00	10	4 basins constructed....	91.85	222.88	15.74	330.47	Do.
1167	Fifth and M Streets NW, northeast corner.....	75.00	10	11 basins constructed....	178.21	405.33	29.18	612.72	Do.
1168	Columbia Road and south roadway of Harvard Street.....	.....	.....	1 manhole rebuilt.....	15.01	28.02	2.07	45.10	Do.
1169	.....	.....	.....	.....	16.79	57.50	3.71	78.00	Quarry Road entrance to Zoo Park.
1161	Northeast corner Tenth and East Capitol Streets. Illinois Avenue and Jefferson Street NW.....	39.00	12	1 basin abandoned.....	.....	9.75	.48	10.23	Repairs to streets, 1913.
1162	.....	.....	.....	2 basins constructed....	44.51	111.94	7.82	164.27	Construction of county roads, 1913.
1163	Northeast corner of Sixth and K Streets NE.....	.....	(1)	.....	.....	12.75	.63	13.38	Improvements and repairs, 1913, northeast schedule.
1164	Eleventh and Fairmont Streets NW., south-west corner.....	9.00	12	1 basin constructed....	11.25	55.25	3.33	69.83	Suburban roads, 1913, Fairmont Street NW.
	Total.....	2,355.50	.....		2,577.18	6,778.89	459.67	9,897.21	

1 To be completed in 1914.

TABLE NO. 9.—*Inspectors and other employees of the sewer division, temporarily employed, and the appropriations from which paid, fiscal year ended June 30, 1913.*

[This table includes the cost of one employee of the record room carried on rolls for four months, also of four employees of the purchasing office.]

Appropriations.	Inspectors.	Overseers.	Other employees.
Construction-sewerage system:			
Main and pipe sewers.....	\$352.50	\$792.37	\$2,185.25
Suburban sewers.....	3,322.38	603.60	2,809.50
Assessment and permit work.....	1,042.50	275.00	2,542.75
Construction-sewage disposal system:			
East side interceptor to Brookland.....	690.00		
Rock Creek main interceptor.....	280.50	15.00	797.25
Anacostia main interceptor.....	1,568.37	45.00	669.00
Unused balances.....	78.50	15.00	89.00
Maintenance:			
Cleaning and repairing.....	672.25	387.00	870.00
Sewerage-pumping service.....		85.00	565.50
Total.....	8,787.00	2,217.97	10,528.25

TABLE NO. 10.—*Average cost of labor and material of pipe sewers (per linear foot) and storm-water receiving basins constructed by day labor.*

Size of sewer.	Length.	Cost of—		Total.
		Labor.	Material.	
8-inch diameter.....	759.85	\$1.019	\$0.257	\$1.276
10-inch diameter.....	22,892.61	1.072	.290	1.362
12-inch diameter.....	18,213.42	1.354	.384	1.738
15-inch diameter.....	8,431.24	1.527	.576	2.103
18-inch diameter.....	2,762.07	1.737	.749	2.486
21-inch diameter.....	1,477.40	1.931	1.083	3.014
24-inch diameter.....	840.10	2.196	1.275	3.471
Basins (111, each including connection to sewer).....		58.596	22.376	80.972

TABLE NO. 11.—*Average cost of pipe sewers for 10 years.*

Year.	8-inch diameter.		10-inch diameter.		12-inch diameter.		15-inch diameter.		18-inch diameter.		21-inch diameter.		24-inch diameter.	
	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.
1904.....	\$0.97	\$0.36	\$0.92	\$0.55	\$1.17	\$0.65	\$1.45	\$0.81	\$1.61	\$0.91	\$1.94	\$0.24	\$2.24	\$1.47
1905.....	.98	.38	.96	.55	1.19	.60	1.41	.77	1.45	.89	1.92	1.01	1.87	1.43
1906.....	.87	.33	1.19	.47	1.26	.54	1.41	.67	1.53	.78	1.88	.93	2.45	1.24
1907.....	1.42	.43	1.43	.48	1.30	.56	1.46	.70	1.82	.85	2.09	.98	2.78	1.26
1908.....	1.34	.42	1.26	.50	1.44	.61	1.69	.75	1.91	.90	1.74	1.14	3.65	1.50
1909.....	1.34	.36	1.16	.36	1.46	.46	1.59	.56	1.58	.62	1.07	1.91	1.91	1.18
1910.....	1.00	.29	.99	.35	1.12	.43	1.19	.52	1.49	.66	.85	1.72	1.72	1.14
1911.....	1.01	.27	1.02	.32	1.17	.40	1.36	.52	1.64	.67	.75	1.82	1.82	1.08
1912.....	1.06	.25	1.08	.33	1.20	.39	1.46	.56	1.63	.67	1.70	.88	1.76	.98
1913.....	1.02	.26	1.07	.29	1.35	.38	1.53	.58	1.74	.75	1.93	1.08	2.20	1.28

TABLE NO. 12.—*Summary of sewerage system for 24 years.*

Fiscal year.	Total miles trunk sewers.	Total miles pipe sewers.	Total miles all sewers.	Total cost sewerage system. <sup>1</sup>	Total cost sewage-disposal system.	Annual cost maintenance and operation sewerage system.	Annual cost maintenance and operation sewerage-disposal system. <sup>2</sup>
1890.....	62.05	204.13	266.18	\$7,400,721.62	.....	\$35,000.00	.....
1891.....	64.89	216.79	281.68	7,623,721.62	.....	42,000.00	.....
1892.....	67.16	227.60	294.76	7,842,721.62	.....	43,000.00	.....
1893.....	68.37	238.45	306.82	8,007,721.62	.....	45,000.00	.....
1894.....	71.32	250.13	321.45	8,298,921.62	.....	45,000.00	.....
1895.....	74.48	260.20	334.68	8,476,431.62	.....	45,000.00	.....
1896.....	77.65	270.28	347.93	8,661,731.62	.....	45,000.00	.....
1897.....	81.36	284.06	365.42	8,901,731.62	.....	50,000.00	.....
1898.....	83.92	298.91	382.83	9,047,731.62	.....	50,000.00	.....
1899.....	85.65	307.36	393.01	9,183,731.62	.....	50,000.00	.....
1900.....	88.30	317.20	405.50	9,309,731.62	.....	50,000.00	.....
1901.....	90.89	327.86	418.75	9,515,731.62	.....	50,000.00	.....
1902.....	93.49	338.13	431.62	9,696,731.62	.....	58,000.00	.....
1903.....	96.31	351.73	448.04	9,817,731.62	.....	58,000.00	.....
1904.....	99.12	357.70	456.82	9,940,731.62	.....	58,000.00	.....
1905.....	103.21	365.60	468.81	10,040,881.62	.....	58,000.00	.....
1906.....	109.09	375.26	484.35	10,128,881.62	.....	42,000.00	.....
1907.....	112.20	389.24	501.44	10,363,881.62	\$3,714,823.00	38,000.00	\$37,295.00
1908.....	113.94	407.24	521.18	10,536,681.62	3,952,768.65	44,500.00	\$38,625.00
1909.....	117.24	424.02	541.26	10,688,681.62	4,031,888.27	45,000.00	58,000.00
1910.....	119.20	448.78	567.98	10,860,556.62	4,095,630.70	48,500.00	58,000.00
1911.....	122.78	469.42	592.20	11,204,188.79	4,146,228.01	50,000.00	58,000.00
1912.....	126.01	492.52	618.53	11,539,374.28	4,228,555.94	50,000.00	59,500.00
1913.....	130.90	513.38	644.28	11,922,177.04	4,366,624.43	50,000.00	59,500.00

<sup>1</sup> Exclusive of sewage-disposal system.<sup>2</sup> The sewage-disposal system went into operation July 1, 1906.<sup>3</sup> Handling a part of the sewage only during these years.TABLE NO. 13.—*Conduits laid during fiscal year ended June 30, 1913.<sup>1</sup>*

Number of ducts.	Washington Ry. & Electric Co.		Capital Traction Co.		Chesapeake & Potomac Telephone Co.		Postal Telegraph-Cable Co.		Total.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	6,805.4	6,805.4	.....	.....	2,469.3	2,469.3	64.0	64.0	9,338.7	9,338.7
2.....	4,947.9	9,895.8	.....	.....	11,782.8	23,565.6	796.7	1,593.4	17,527.4	35,054.8
3.....	.....	.....	.....	.....	15.0	45.0	.....	.....	15.0	45.0
4.....	23,985.5	95,942.0	.....	.....	7,011.4	28,045.6	279.4	1,117.6	31,276.3	125,105.2
6.....	419.6	2,517.6	.....	.....	1,555.0	9,330.0	634.5	3,807.0	2,609.1	15,654.6
8.....	3,436.2	27,489.6	2,300.0	18,400.0	147.0	1,176.0	1,140.3	9,122.4	7,023.5	56,188.0
12.....	289.2	3,470.4	.....	.....	.....	.....	.....	.....	289.2	3,470.4
Total.....	39,883.8	146,120.8	2,300.0	18,400.0	22,980.5	64,631.5	2,914.9	15,704.4	68,079.2	244,856.7

<sup>1</sup> This table does not include 3,142 feet of United States Government conduit and 3,316 feet of United States Government pipe lines and 100.6 feet of private conduit.



TABLE NO. 14.—*Gas mains laid during fiscal year ended June 30, 1913.*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>
2-inch.....	1,244.3		1,244.3
3-inch.....	37.5		37.5
4-inch.....	32,549.3	4,597.8	37,147.1
6-inch.....	19,538.6	6,021.0	25,559.6
8-inch.....	4,447.6	1,068.9	5,516.5
12-inch.....	917.6		917.6
20-inch.....	2,377.5		2,377.5
24-inch.....	121.7		121.7
Total.....	61,234.1	11,687.7	72,921.8

TABLE NO. 15.—*Summary of conduits laid to June 30, 1913.<sup>1</sup>*

Number of ducts.	Washington Ry. & Electric Co.		Capital Traction Co.		Chesapeake & Potomac Telephone Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	64,021	64,021			49,285	49,285
2.....	140,997	281,994	15,742	31,484	250,213	500,426
3.....	236	708			5,655	16,965
4.....	434,256	1,737,024	22,681	90,724	171,915	687,660
5.....						
6.....	51,191	307,146	8,174	49,044	95,347	572,082
7.....			27	203	82	574
8.....	106,128	849,024	15,214	121,712	52,009	416,072
9.....	7,325	58,625			114	1,026
10.....	8,396	83,960	32	320	22,364	223,640
12.....	61,425	737,100	908	10,896	11,336	136,032
13.....	374	4,862			212	2,756
14.....	3,104	43,456	4,257	59,598	3,831	56,631
15.....	68	1,020				
16.....	4,971	79,536	401	6,416	8,037	128,584
17.....					636	10,812
18.....	2,214	39,852			4,149	74,682
20.....	562	11,240	830	16,600	1,407	28,140
22.....	134	2,948	9,109	200,398	823	18,106
24.....	3,176	76,224			2,270	54,480
25.....					304	7,600
26.....			280	7,280		
28.....	2,261	63,308				
30.....	53	1,590			313	9,390
32.....	77	2,464			485	15,520
36.....	3,854	138,744			26	936
38.....	193	7,334				
40.....					1,599	63,560
44.....	424	18,656				
56.....					749	41,944
58.....	7	406				
64.....	106	6,784			176	11,264
70.....					53	3,710
72.....					118	8,496
82.....					35	2,870
Total.....	895,553	4,618,026	77,657	594,675	683,533	3,143,243

<sup>1</sup> This table does not include 6,525 feet of United States Government conduit, 5,116 feet of United States Government pipe lines, 176 feet of Great Falls & Old Dominion Ry. Co. conduit, 879.5 feet of Washington Market Co. pipe lines, and 588.6 feet of private conduit.

TABLE NO. 15.—*Summary of conduits laid to June 30, 1913—Continued.*

Number of ducts.	Western Union Telegraph Co.		Postal Telegraph-Cable Co.		Total.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	41	41	15,297	15,297	128,604	128,604
2.....	1,911	3,822	1,045	2,090	409,908	819,816
3.....	6,940	20,820			12,831	38,493
4.....	7,295	29,180	34,001	136,004	670,148	2,680,592
5.....	4,177	20,885			4,177	20,885
6.....	4,232	25,392	16,903	101,418	175,847	1,055,082
7.....					111	777
8.....			1,140	9,120	174,491	1,395,928
9.....					7,439	59,651
10.....	183	1,830			30,975	309,750
12.....					73,669	884,028
13.....	309	4,017			895	11,635
14.....					11,192	151,685
15.....	44	600			112	1,680
16.....					13,409	214,536
17.....					636	10,812
18.....					6,363	114,534
20.....					2,799	55,980
22.....					10,066	221,452
24.....					5,446	130,704
25.....					304	7,600
26.....					280	7,280
28.....					2,261	63,308
30.....					366	10,980
32.....					562	17,984
36.....					3,880	139,680
38.....					193	7,334
40.....					1,589	63,560
44.....					424	18,656
55.....					749	41,944
58.....					7	406
64.....					282	18,048
70.....					53	3,710
72.....					118	8,496
82.....					35	2,870
Total.....	25,132	106,647	68,346	263,889	1,750,221	7,726,480

TABLE NO. 16.—*Summary of gas mains laid to June 30, 1913, beginning July 1, 1906.*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>
11-inch.....	1,647		1,647
2-inch.....	5,578	1,068	6,646
3-inch.....	1,806		1,806
4-inch.....	143,815	22,723	167,538
6-inch.....	194,966	48,773	243,739
8-inch.....	4,448	14,268	18,716
10-inch.....		4,107	4,107
12-inch.....	79,523	33,309	112,832
20-inch.....	5,446		5,446
24-inch.....	8,188		8,188
Total.....	445,417	125,248	570,665

## RIGHTS OF WAY ACQUIRED DURING THE FISCAL YEAR ENDING JUNE 30, 1913.

For separate system outlet sewer (Broad Branch trunk) for vicinity of National Highlands subdivision, in line of McKinley Street extended, between Thirty-seventh Street and Nevada Avenue extended; also in line of Nevada Avenue extended, between McKinley Street extended and Rittenhouse Street, through parcels 48/27 and 49/16.<sup>1</sup>

For separate system outlet sewer (Broad Branch trunk) for Jocelyn Street service, between Kanawha and Jocelyn Streets, through lot 1 of square 1873.<sup>1</sup>

For separate system outlet sewer (Broad Branch trunk) for Jocelyn Street service, between Kanawha and Jocelyn Streets, through lot 47 of square 1873.<sup>1</sup>

<sup>1</sup> Voluntary dedication.

For separate system outlet sewer (Broad Branch trunk) for vicinity of Chevy Chase Grove subdivision, in line of Nebraska Avenue extended, between Pleasant Drive and Broad Branch Road, through parcels 47/13 and 47/3.<sup>1</sup>

For separate system outlet sewer (Broad Branch trunk) for vicinity of Chevy Chase Grove subdivision, between Broad Branch Road and Thirty-third Street, through lot 1 of square 2014.<sup>1</sup>

For separate system service sewer (Falls Branch trunk) in line of Jenifer Street extended, between Wisconsin Avenue and Forty-third Street, through parcel 26/22.<sup>1</sup>

For separate system service sewer (Falls Branch trunk) in line of Forty-second Place extended, between Jenifer and Keokuk Streets, through parcel 26/22.<sup>1</sup>

For separate system service sewer (Falls Branch trunk) in line of Forty-second Street extended, between Jenifer and Keokuk Streets, through parcel 26/22.<sup>1</sup>

For separate system outlet sewer (Falls Branch trunk) in line of Forty-fourth Street extended, between Fessenden and Garrison Streets, through parcel 25/8.<sup>2</sup>

For separate system outlet sewer (Falls Branch trunk) in line of Forty-fourth Street extended, between Fessenden and Harrison Streets, through parcel 25/3.<sup>1</sup>

For separate system outlet sewer (Falls Branch trunk) in line of Forty-fourth Street extended, between Garrison and Harrison Streets, through parcel 25/6.<sup>1</sup>

For separate system outlet sewer (Potomac interceptor) for vicinity of Potomac Heights subdivision, between Chesapeake & Ohio Canal and Potomac Avenue, through parcel 2/2.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for vicinity of Potomac Heights subdivision, west of Chain Bridge, through property of Chesapeake & Ohio Canal Co.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for vicinity of Conduit Road, between Potomac River and Chesapeake & Ohio Canal, through property of the Washington & Western Maryland Railroad Co.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for vicinity of Conduit Road between Potomac River and Canal Road, through property of the Chesapeake & Ohio Canal Co.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for vicinity of Albany Park subdivision, between Ashby Street and Sherrier Place, through lot 803 of square 1400 and parcel 11/24.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for Sherrier Place service, between Sherrier Place and Chain Bridge Road, through parcels 11/24 and 4/8.<sup>3</sup>

For separate system outlet sewer (Potomac interceptor) for Sherrier Place service, between Chain Bridge Road and line of Sherrier Place, through parcel 11/22.<sup>1</sup>

For Rock Creek main interceptor, in the valley of Rock Creek, between Klinge Road and Rock Creek Park, through parcel 55/144.<sup>2</sup>

For Rock Creek main interceptor, in the valley of Rock Creek, between Klinge Road and Rock Creek Park, through parcel 55/88.<sup>2</sup>

For Rock Creek main interceptor, in the valley of Rock Creek, between Klinge Road and Rock Creek Park, through parcels 55/114 and 55/103.<sup>2</sup>

For Macomb Street trunk sewer, between Klinge Road and Macomb Street, through parcels 55/52, 55/53, 55/54, and lot 811 of square 2084.<sup>4</sup>

For semicombined system service sewer (Rock Creek west side interceptor) for Protestant Episcopal Cathedral Foundation, District of Columbia, north of Jewett Street extended and east of Wisconsin Avenue, through parcel 41/1.<sup>3</sup>

For separate system outlet sewer (Piney Branch trunk) in line of Whittier Street extended, between Third and Fourth Streets, through parcel 115/70.<sup>1</sup>

For separate system service sewer (Piney Branch trunk) in line of Whittier Street extended, between Fourth Street and Fifth Street extended, through parcel 103/1.<sup>1</sup>

For separate system service sewer (Piney Branch trunk) in line of Whittier Street extended, between Fourth Street and Fifth Street extended; also in line of Fifth Street extended, between Whittier Street extended and Aspen Street, through parcel 103/47.<sup>1</sup>

For Piney Branch trunk sewer, in line of Arkansas Avenue extended, between Allison and Crittenden Streets, through parcel 84/53.<sup>1</sup>

For Piney Branch trunk sewer, in line of Arkansas Avenue extended, between Buchanan Street and Iowa Avenue, through parcel 85/2.<sup>1</sup>

For combined system outlet sewer (Piney Branch trunk) for Perry Place service, between Spring Road and Perry Place, through lot 52 of square 2689.<sup>1</sup>

For Michigan Avenue trunk sewer, north of Michigan Avenue and between Sargent Road and Thirteenth Street, through lots 8 to 1, inclusive, of square 3972.<sup>1</sup>

For Michigan Avenue trunk sewer, north of Michigan Avenue and between Thirteenth and Taylor Streets, through lots 30 to 1, inclusive, of square 3920.<sup>1</sup>

<sup>1</sup> Voluntary dedication.

<sup>2</sup> Consideration paid.

<sup>3</sup> Permit not recorded.

<sup>4</sup> Not recorded.

For Michigan Avenue trunk sewer, north of Michigan Avenue and between Taylor and Shepherd Streets, through lots 42, 1 to 4, inclusive, and 8 to 5, inclusive, of square 3921.<sup>1</sup>

For Michigan Avenue trunk sewer, north of Michigan Avenue and between Twelfth Street and Eleventh Place, through lots 19 to 26, inclusive, 11, 12, and 9 to 5, inclusive, of square 3886.<sup>1</sup>

For Michigan Avenue trunk sewer, north of Michigan Avenue and west of Eleventh Place, through lot 52 of square 3888.<sup>1</sup>

For separate system service sewer (east side interceptor) in line of West Virginia Avenue extended, between Twenty-fifth Street extended and Everts Street extended; also in line of Everts Street extended, between West Virginia Avenue and Twenty-eighth Street, through parcel 165/1.<sup>1</sup>

For separate system service sewer (east side interceptor) in line of Thayer Street proposed, between line of Woodridge Street and Rhode Island Avenue, through parcel 155/99.<sup>1</sup>

For separate system service sewer (Anacostia main interceptor) in line of Twenty-second Street extended, between R Street and line of Ridge Place produced, between Twenty-second Street extended and Twenty-fourth Place, through parcel 218/4.<sup>1</sup>

For Anacostia main interceptor in line of Railroad Avenue produced, between Nichols Avenue and Thirteenth Street, through parcel 224/14.<sup>1</sup>

For Naylor Road trunk outlet sewer, from line of condemnation for highway and park purposes, Anacostia River improvements, to right of way of Alexandria Branch, Baltimore & Ohio Railroad, through parcel 217/1.<sup>2</sup>

For Naylor Road trunk outlet sewer from right of way of Alexandria Branch, Baltimore & Ohio Railroad, to Eighteenth Street, through parcel 218/13.<sup>2</sup>

For Good Hope Run outlet sewer from line of condemnation for highway and park purposes, Anacostia River improvement, to right of way of Alexandria Branch, Baltimore & Ohio Railroad, through parcel 224/5.<sup>2</sup>

## REPORT OF THE INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., August 22, 1913.

SIR: I submit herewith the annual report covering the transactions of the building division during the fiscal year ended June 30, 1913, which includes building operations of the Federal Government in the District of Columbia during the same period, as reported by the Supervising Architect of the Treasury Department.

### Statement of permits issued from July 1, 1912, to June 30, 1913.

	Number.	Value.		Number.	Value.
<b>Brick:</b>			<b>Concrete:</b>		
Repairs.....	1,562	\$1,476,017	Dwellings.....	3	\$11,000
Dwellings.....	1,263	4,060,805	Car barn.....	1	3,000
Apartments.....	14	910,500	Grotto.....	1	5,000
Stores and dwellings.....	25	149,030	Greenhouse.....	1	3,000
Stores.....	41	461,394	Garages.....	2	600
Stables.....	19	28,800	Metal sheds.....	114	16,966
Garages.....	123	126,808	Frame sheds.....	565	31,731
Warehouses.....	15	96,137	Repairs.....	582	120,180
Office buildings.....	13	697,900	Dwellings.....	277	820,778
Church.....	1	27,000	Stables.....	6	3,263
Sheds.....	19	5,944	Greenhouse.....	1	700
Workshops.....	5	54,276	Churches.....	3	3,200
Car barn.....	1	35,000	School.....	1	3,500
Banks.....	5	133,000	Laundry.....	1	1,000
Stores and offices.....	4	86,779	Garages.....	3	1,747
Schools.....	2	85,000	Car shed.....	1	500
Blacksmith shops.....	3	4,000	Elevators.....	87	148,551
Halls.....	3	38,000	Motors.....	171	81,976
Store and apartment.....	1	28,000	Heating apparatus.....	1	325
Bakeries.....	3	6,190	Boilers.....	7	9,135
Car shed.....	1	19,000	Engines and boilers.....	2	900
Store and theater.....	1	8,000	Gas engines.....	7	1,925
Distillery.....	1	15,833	Gasoline engine.....	1	300
Printing office.....	1	47,550			
Factory.....	1	58,866			
Greenhouse.....	1	175	Total.....	4,975	10,214,753
Nursery (Providence Hospital).....	1	4,000	Awnings.....	177	13,275
Dairies.....	2	9,200	Fire escapes.....	33	6,600
Carriage house.....	1	5,150	Signs.....	911	9,110
Theater.....	1	13,800			
Hotels.....	2	157,003	Grand total.....	6,096	10,243,738
Asylum.....	1	32,860			
Laboratory.....	1	63,469			

<sup>1</sup> Voluntary dedication.

<sup>2</sup> Consideration paid.

*Statement of operations of United States Government.*

Bureau of Engraving and Printing (in connection with).....	\$230, 267. 46
Transactions of District of Columbia, total.....	10, 243, 738. 00
Grand total.....	10, 474, 005. 46

*Comparative statement for the years 1912 and 1913.*

	New buildings.	Repairs, etc.	Dwellings.	Apartmentments.	Business buildings.
1913.....	1, 850	4, 246	1, 540	14	296
1912.....	2, 535	3, 300	2, 174	29	225
Total.....	<sup>1</sup> 685	946	<sup>1</sup> 634	<sup>1</sup> 15	71

<sup>1</sup> Decrease.

Valuation of building operations, exclusive of Federal operations:	
1913 (includes awnings, fire escapes, and signs).....	\$10, 243, 748
1912.....	16, 772, 183
Decrease.....	6, 528, 435
Permits issued, including buildings, repairs, awnings, signs, engines, motors, elevators, etc.:	
1913.....	6, 294
1912.....	6, 270
Increase.....	24
Projections beyond the building line, permits for.....	2, 447

The following summary will show the distribution of improvements in the different sections of the District and the values of same:

	Buildings.	Repairs, etc. <sup>1</sup>
Northeast.....	\$456, 288	\$81, 077
Southeast.....	481, 083	61, 224
Northwest.....	2, 686, 942	1, 278, 547
Southwest.....	114, 562	34, 701
County.....	4, 518, 037	502, 292
Total.....	8, 256, 912	1, 957, 841

Total for buildings, repairs, etc., \$10,214,753.

<sup>1</sup> Does not include awnings, fire escapes, or signs, cost of which is estimated.

*Estimated number of buildings in District of Columbia.*

	Brick.	Frame.
1912.....	58, 222	25, 559
1913.....	1, 568	282
Total.....	59, 790	25, 841

NOTE.—All comparisons are made with, and data given of, building transactions under the supervision of the building division, District of Columbia. The data furnished of building transactions under the supervision of the United States Government are for the sole purpose of estimating the total value of building operations in the District of Columbia.

It will be noted from the above that while the office issued 24 more permits during the year 1913 than during the previous year, the valuation of building operations was reduced from almost \$17,000,000 in 1912 to about \$10,000,000 in 1913. There was a very material decrease in all new buildings, except business buildings,\* but the repairs were much greater.

The fees collected by the office for permits were but \$26,417.71, as compared with \$33,000 in the previous year, showing a loss of some \$6,800, and as the expenses of the office were \$34,654.85, the receipts did not meet the expenditures by \$8,237.14.

The District appropriation bill for 1910 contained a provision directing the commissioners to fix a schedule of fees in the building department so as to place that office on a self-supporting basis. At the beginning of this fiscal year the office had collected \$4,200 in excess of its expenses, but with the substantial falling off in the receipts during this fiscal year, the total expenses of the office since the enactment of this provision are about \$4,000 in excess of the receipts. It is believed, however, that as in other parts of the country, the building operations here are much less than normal, and that it is not fair to assume that this loss will continue to prevail. The present fees for permits are generally considered by builders and owners to be fully as high as may equitably be demanded, and this view is concurred in by the office, and it is not felt that the commissioners would be justified in raising them. On the other hand, it is impracticable to reduce the expense of the office and render in inspection, value received for fees, as notwithstanding the value of building operations fell off tremendously, the number of permits issued were greater than ever before, indicating that there were not so many big jobs undertaken, but a large number of scattered ones, which took up quite as much of the inspection time. It is believed therefore that the force in the office should not be curtailed, and on the contrary the estimates submitted for the next fiscal year have recommended additions to the personnel and certain deserved increases in salaries.

On account of the many additions and changes to the building code, made since the edition of 1909 was printed, it became necessary to have a new code printed during the year, and it is believed the present code is now fully up to date and compares favorably with that of any other city in the Union.

Attached hereto are reports of the civil engineers and computers, the fire-escape inspector, the elevator inspectors, and the several assistant building inspectors, which show the details of work covered by the office.

The request of the civil engineers and computers that a small appropriation be secured from Congress so as to permit them to witness some of the more important tests of fireproofing material being made from time to time throughout the country is recommended, as it is upon the expert knowledge of the engineers that the major portion of the work of the office depends, and they should have the opportunity to keep thoroughly up to date in this important branch of protection from fire.

The buildings coming within the purview of the fire-escape law are now generally equipped with fire escapes and such other requirements as that law provides for, though in some cases full compliance has not yet been had in the matter of certain necessary guide signs, fire-alarm gongs, and extinguishers. The office is, however, making special effort to secure full compliance with the law, and substantially good results in this direction have been accomplished during the past year.

The matter of transportation for employees of the office in the fulfillment of their duties has always been a problem of great difficulty, but substantial aid was given the department when it was permitted by the appropriation bill for the year in question to purchase one motor vehicle for the use of the employees of this division in inspection work. This automobile has proved of great service to the office, and it is believed that the further provision in the appropriation for the year 1914 allowing the office \$1,000 for transportation will be of very substantial benefit.

My acknowledgments are due to the employees of the building division for the work accomplished during the past year.

MORRIS HACKER,  
*Inspector of Buildings.*

Capt. JULIAN L. SCHLEY,  
*Corps of Engineers, United States Army,  
Assistant to the Engineer Commissioner.*

#### COMPUTERS' REPORT.

WASHINGTON, D. C., September 20, 1913.

SIR: We submit herewith our report for the fiscal year ended June 30, 1913.

There has been a noticeable falling off in the construction of "speculative" buildings during the year, but a steady and substantial increase in the erection of fireproof residences and apartment houses. There has also been an increase in the number of cheap places of amusement of large capacity, i. e., theaters, etc., of a character requiring special attention on the part of this branch of the division to the features of fire protection and means of exit for the audiences.

It is believed that a mental survey of the building operations throughout the past year will support the renewal of the recommendation that an appropriation be sought, or provision made, that will enable the engineers of this division to take advantage of some of the many and important tests of fireproof construction and materials.

This is a feature of building construction that is justly demanding and receiving increased consideration every year; and that the greatest benefit may be gained in this regard, it is essential that some means be provided whereby actual attendance upon some of the tests made may be had by representatives of this division of the District Government.

Very respectfully,

T. L. COSTIGAN,  
F. W. HART,  
*Civil Engineers and Computers.*

The INSPECTOR OF BUILDINGS.

# REPORT OF INSPECTOR OF FIRE ESCAPES.

WASHINGTON, August 20, 1913.

SIR: I have the honor to respectfully submit my annual report for the fiscal year ending June 30, 1913, as follows:

Visits to apartment houses.....	1,189
Visits to theaters.....	177
Visits to hotels.....	149
Miscellaneous visits, including halls, stores, etc.....	878
Cases in police court.....	3
Notices served.....	232
Compliance notices mailed.....	176
Fire escapes erected.....	199
Active cases in files.....	248

Very respectfully,

JAMES P. PARRY,  
*Inspector of Fire Escapes.*

The INSPECTOR OF BUILDINGS.

# REPORT OF INSPECTORS OF ELEVATORS.

WASHINGTON, D. C., September 19, 1913.

SIR: We have the honor to submit herewith the report of the transactions of the board of examiners for elevator operators for the fiscal year ending June 30, 1913.

A regular weekly examination has been held during the year and has resulted in a satisfactory increase of efficiency in the elevator operators in the District.

Elevator operators examined.....	482
Operators who failed in examination.....	28
Revenue derived from examinations for the District of Columbia.....	\$241

Very respectfully,

ROY E. HAYNES,  
*Secretary, Board of Elevator Examiners.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., July 1, 1913.

SIR: I have the honor to herewith submit my annual report for the fiscal year ended June 30, 1913.

Passenger elevators installed.....	22
Freight elevators installed:	
Power.....	14
Hand power.....	19
Alterations to elevators.....	2
Miscellaneous inspections.....	55
Elevators examined.....	1,302
Condemnations on elevators.....	562
Elevators inspected for the United States Government.....	53
Condemnations on elevators for United States Government.....	31
Elevators inspected for District of Columbia.....	29
Condemnations on elevators for District of Columbia.....	5

WILLIAM I. EVANS,  
*Inspector of Elevators.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., July 1, 1913.

SIR: I have the honor to submit my report for the fiscal year ended June 30, 1913, covering the duties assigned to me in the district north of Pennsylvania Avenue, east of Tenth Street, and north of Massachusetts Avenue.

Passenger elevators:	
Installed.....	15
Altered.....	3
Freight elevators installed.....	21
Elevators inspected quarterly.....	285
Total inspections.....	1,284
Total condemnations.....	569
Inspections for United States Government.....	37
Condemnations on elevators of United States Government.....	16
Miscellaneous inspections, visits, etc.....	49
Certificates issued.....	797

Respectfully submitted.

R. H. BRUCE,  
*Inspector of Elevators.*

THE INSPECTOR OF BUILDINGS.

#### REPORTS OF THE ASSISTANT INSPECTORS OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: In accordance with the following reports of the assistant inspectors for the fiscal year ending June 30, 1913, an increase of 981 inspections is shown over that of the previous year, amounting respectively to 74,093 against 73,112.

This total will average 27.4 inspections daily to the credit of each field inspector.

Continued improvement in the line of building construction is generally noted throughout the District in all its branches, and during such period very special attention has been given the work with the view of enforcing strict compliance with our more advanced and improved building regulations.

Accidents to those engaged in building work have been scarce, and in no case were they due to careless or faulty construction. It is therefore to be appreciated in view of a certain element conducting the different branches of building work in this city that we are in a position to forward this statement.

Appreciating also your attitude and advice in the more worthy matters, I am,  
Most respectfully,

J. WM. DOWNING,  
*Assistant Inspector of Buildings.*

THE INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	12,730
Visits to old buildings.....	4,133
Visits of miscellaneous character.....	318
Total.....	17,181
Condemnation of buildings or parts thereof.....	50

Respectfully submitted.

A. K. SELDEN,  
*Assistant Inspector of Buildings.*

THE INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	3,980
Visits to old buildings.....	3,940
Visits of miscellaneous character.....	855
Total.....	8,775
Condemnation of buildings or parts thereof.....	98

Respectfully submitted.

E. G. CURTIS,  
*Assistant Inspector of Buildings.*

THE INSPECTOR OF BUILDINGS.



WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	8,388
Visits to old buildings.....	1,692
Visits of miscellaneous character.....	728
Total.....	10,808
Condemnation of buildings or parts thereof.....	45
Police-court cases pending.....	1
Cast-iron columns inspected.....	32

Respectfully submitted.

A. S. J. ATKINSON,  
*Assistant Inspector of Buildings.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	10,095
Visits to old buildings.....	1,015
Visits of miscellaneous character.....	77
Total.....	11,190
Condemnation of buildings or parts thereof.....	49
Police-court cases.....	3

Respectfully submitted.

S. G. HUNTT,  
*Assistant Inspector of Buildings.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	2,280
Visits to old buildings.....	3,976
Visits of miscellaneous character.....	268
Total.....	6,504
Condemnation of buildings or parts thereof.....	29
Buildings taken down.....	25
Cast-iron columns inspected.....	6

Respectfully submitted.

F. J. NIEDOMANSKI,  
*Assistant Inspector of Buildings.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	4,592
Visits to old buildings.....	1,753
Visits of miscellaneous character.....	69
Total.....	6,414
Condemnation of buildings or parts thereof.....	12

Respectfully submitted.

J. B. HAMMOND,  
*Assistant Inspector of Buildings.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	3,310
Visits to old buildings.....	1,560
Visits of miscellaneous character.....	481
Total.....	5,351
Condemnation of buildings or parts thereof.....	75
Police-court cases.....	1

Respectfully submitted.

A. M. PROCTOR,  
*Assistant Inspector of Buildings.*

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1913.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1913:

Visits to new buildings.....	5,502
Visits to old buildings.....	1,754
Visits of miscellaneous character.....	614
Total.....	7,870
Condemnation of buildings or parts thereof.....	70
Buildings taken down.....	19

Respectfully submitted.

EDWARD KERN,  
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

#### REPORT OF THE INSPECTOR OF STEAM BOILERS.

WASHINGTON, September 28, 1913.

GENTLEMEN: I have the honor to submit the following report for the fiscal year ending June 30, 1913, together with fees received and expenses incurred:

Number of boilers inspected.....	479
Number of boilers inspected for District of Columbia.....	81
Number of boilers inspected and condemned for further use.....	7
Cases of scale and deposit on tubes and shell plates.....	17
Internal corrosion.....	2
Defective stay bolts and braces.....	7
Setting defective.....	8
Burned plates.....	4
Cases of defective tubes.....	17
Defective steam gauges.....	8
Serious leaks in seams.....	6
Defective sheets.....	6

Total amount received for 479 boilers.....	\$2,390.00
Expenses.....	483.24

Balance.....1,911.76

Very respectfully,

E. F. VERMILLION,  
Inspector of Steam Boilers, District of Columbia.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

#### REPORT OF THE BOARD OF EXAMINERS OF STEAM ENGINEERS.

WASHINGTON, D. C., August 27, 1913.

SIR: We herewith submit to you the report of the board of examiners of steam engineers for the year ending June 30, 1913.

The following table shows the work as it progressed during each month:

	Meetings held.	Applications.			First class.	Second class.	Third class.	Duplicate
		Received.	Ap- proved.	Incom- petent.				
1912.								
July.....	4	8	5	6	.....	2	.....	.....
August.....	5	17	4	13	1	.....	3	.....
September.....	4	8	2	6	.....	1	1	.....
October.....	4	8	1	7	.....	.....	1	.....
November.....	5	1	2	7	.....	.....	.....	2
December.....	4	8	2	6	1	.....	1	.....
1913.								
January.....	1	11	3	8	.....	.....	1	2
February.....	4	14	3	11	.....	2	1	.....
March.....	4	11	4	7	.....	1	2	1
April.....	4	8	.....	8	.....	.....	.....	.....
May.....	5	8	3	8	1	1	1	.....
June.....	4	9	1	8	.....	.....	.....	1
Total.....	52	119	27	92	3	7	11	6

The number of applicants for engineer's license during the past year has been greatly reduced, owing principally to the advances made in generating power by means other than steam. Electricity, gasoline, and gas, for which no licensed engineers are required, are being used extensively instead of steam.

In addition to examining applicants for license as steam engineers, the board has also conducted 25 meetings for the purpose of examining applicants for automobile and motorcycle license, at which meetings there have been examined 2,944 applicants. A full report of this part of the work is being submitted by the secretary of the automobile board.

Our estimate of expenses for the year ending June 30, 1915, has been forwarded to the secretary of the Board of Commissioners, and we respectfully ask that the amount set forth be appropriated.

Respectfully submitted.

E. F. VERMILLION,  
H. BOESCH,  
JAS. T. FINK,

*Board of Examiners of Steam Engineers.*

The INSPECTOR OF BUILDINGS.

# REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, October 1, 1913.

SIR: I have the honor to submit the thirty-first annual report of the work performed by the division of plumbing inspection for the fiscal year ending June 30, 1913. The following table shows the work performed by the outside force of assistant inspectors:

Preliminary inspections.....	6, 785
Cast-iron sewers:	
New.....	5, 258
Repairs.....	1, 319
Terra-cotta sewers:	
New.....	70
Repairs.....	558
Main sewers tapped.....	1, 851
Rough work in—	
New houses.....	2, 813
Old houses.....	2, 382
Water services.....	923
Notices served.....	386
Peppermint tests and final inspections.....	4, 321
Work not ready for inspection when ordered.....	1, 154
Changes ordered in work incorrectly installed.....	339
Special inspections of municipal work.....	165
Gas.....	3, 032
Complaints.....	7, 395
Total.....	38, 751

To the above are to be added inspections by the head of the office of a general nature, 255; special inspections on construction work for the District, 806; and by the principal assistant inspector of plumbing, consisting of inspections on complaints relative to illegal plumbing, examination of materials, visits to homes of witnesses, and general police work which does not appear elsewhere, 1,832. The total of these inspections should be added to the above total, which will give a general total of 41,644 inspections made by the entire force. This shows a decrease in the number of inspections over the previous year, but, on account of the work being more scattered due to the extension of sewer and water to the outlying sections of the District, the amount of work done was about the same as last year.

The following table shows the total inspections made each year since the fiscal year of 1895:

1894-95.....	5, 708	1904-5.....	27, 337
1895-96.....	8, 677	1905-6.....	30, 185
1896-97.....	14, 112	1906-7.....	32, 190
1897-98.....	17, 550	1907-8.....	29, 547
1898-99.....	17, 600	1908-9.....	39, 404
1899-1900.....	17, 405	1909-10.....	44, 953
1900-1901.....	19, 965	1910-11.....	46, 035
1901-2.....	32, 621	1911-12.....	45, 875
1902-3.....	25, 297	1912-13.....	41, 644
1903-4.....	25, 637		

It is estimated that the new plumbing work installed during the last fiscal year amounted to \$797,400, which is a decided falling off from last year's estimate of \$1,250,000. The estimate of repairs and remodeling work is about \$500,000, which is the same as last year.

The total number of inspections made by the outdoor force (38,751) divided by the total number of days in the field gives an average of 18 inspections per day, which is slightly more than the average last year. This average is too high to allow time enough for the complete and thorough inspection which should be given. The greatest number of inspections made by any one man in one day was 70, and this number was allowable on account of inspections being made in rows of houses near each other, very little time being taken up by any one inspection.

#### CHANGES IN THE REGULATIONS.

The policy of making any necessary changes in the regulations to bring the same up to date and to bring the practice and text in harmony was carried out as last year, and at the close of the fiscal year this office was able to order a new book printed, with the full expectation that it will be several years before any extensive further changes will be necessary. Chief among the changes made were the reduction of the requirements for larger sized sewers by increasing capacities materially. This was only done after a great deal of computation and after a number of extensive experiments had been carried to completion. The use of hydrant hopper cocks for yard closets was also interdicted, and it is expected that this will show a large saving in the use of Potomac water after the regulation has been in force a sufficient time to cause the replacement of any considerable number of these obsolete fittings.

#### PER DIEM EMPLOYEES.

With the exception of the men employed as temporary assistant inspectors, under the special appropriation for that purpose, there were no other per diem employees in this office during the past year.

#### POLICE-COURT CASES.

The total number of warrants obtained was 49, divided as follows:

Violation of plumbing regulations by plumbers.....	9
Violation of plumbing regulations by owners.....	25
Work done by unlicensed gas fitter.....	1
Work done by unlicensed plumbers.....	11
Hiring unlicensed plumber.....	1
Excavations without permits.....	2
<b>Total.....</b>	<b>49</b>

These cases were disposed as follows:

Personal bonds to comply with regulations.....	5
Nol-prossed on compliance with commissioners' order.....	29
Nol-prossed by order of inspector of buildings.....	1
Forfeitures aggregating \$90.....	9
Cases pending at close of fiscal year.....	5
<b>Total.....</b>	<b>49</b>

#### OFFICE WORK.

The following table gives the amount of office work performed during the past year and a comparison with that of the four previous years:

	1909	1910	1911	1912	1913
Official letters.....	1,143	980	2,542	2,340	1,915
Unofficial letters.....	4,211	7,204	5,240	4,973	4,138
Indorsements.....	2,761	2,172	2,905	2,204	2,118
Reports of inspectors.....			9,641	9,659	9,015
Indexes.....			1,223	1,404	1,673
Plans prepared.....	34	26	30	33	26
Specifications prepared.....	36	30	45	41	34
Plans and specifications revised.....	12	4	6	14	1
Examination plans new buildings.....	2,860	2,421	2,273	3,256	1,857
Examination repair applications.....	2,225	4,466	2,907	2,263	3,138
Postage stamps used:					
2-cent.....	3,228	3,558	4,300	3,825	3,396
1-cent.....	192	499	2,297	2,345	1,143
Postal cards used.....		919	591	89	56

## COMPULSORY DRAINAGE.

During the past fiscal year about 85 cases were received in this office from the health department and other branches of the District Government, with recommendations that premises be provided with sewer and water connections by the District of Columbia and the cost thereof assessed against the property in accordance with the terms of the drainage act. Notices were served on approximately half of this number. Some of the premises were found with improper lot designations; in some cases, buildings did not set wholly upon the lots for which they were assessed; other buildings were located partly on two or more lots and others on unsubdivided land; in which cases this office could not compel connection. Of the number upon which service of notice was made and legally completed, 5 were torn down; 30 were connected with sewer and water by the owners; plans for several have been filed by the owners, and in 4 premises sewer and water were provided by the District under contract, at a cost of \$834.07. In addition, minor work was done, under the nuisance act, at two premises, at a total cost of \$57, a total being expended on this class of work of \$891.07, all of which will be assessed against the property in the usual manner. Of the number of cases referred to this office there are several now under notice, and the completion of these cases will show in the report of the next fiscal year.

## PUBLIC CONVENIENCE STATIONS.

During the past year the public convenience stations operated on the 12-hour basis made necessary by the reduction of the appropriation from \$11,200 to \$7,500, and the service has been unsatisfactory in many respects, many complaints having been received in this office from time to time about the early closing and it being increasingly hard to secure and hold good employees to work 12 hours per day. It is urgently requested that in order that the citizens may obtain the full benefit of the investment of upward of \$70,000, by having full use of the stations during a reasonable period of opening, that the matter of having the former appropriation restored be urged upon the Congress. During the past year the appropriation of \$7,500 for maintenance was entirely expended with the exception of about \$190. Had it been possible to use this small sum in extending the hours the balance would have been practically nothing, but this small sum was insufficient for the purpose.

Previously, the present stations were operated at a yearly cost of \$3,500 each, and the past year this has been reduced to \$2,500. Of the public comfort stations throughout the country, the only one comparable with the District stations of which this office has record, was operated at an annual cost of \$3,200. All other stations operated for a less sum than \$3,500 per annum (of which this office has record) obtain their light and heat without cost to them from some adjacent municipal building and few of them have a ventilating plant of any consequence. The large majority of public comfort stations throughout the country are operated for sums between \$4,000 and \$5,000 per annum, and, in one case the amount expended was in excess of \$6,000. The general economy of administration can be fairly judged from the fact that the cost of operation per patron for the year amounts to less than 4 mills, not taking into consideration the cash receipts which would have reduced it to less than 2½ mills per patron had these receipts been available for the purchase of supplies, etc., as is usual.

The total attendance during the year at the station at Seventh Street and Pennsylvania Avenue was 909,023; at the station at Thirteenth-and-a-half Street and Pennsylvania Avenue, 413,274, and at the station at Ninth and K Streets, 520,118, making a total of 1,842,415 persons using these stations. The cash receipts from 5-cent pay compartments and other small sources of income amounted to \$1,771.16, \$582.16, and \$382.06, for the above locations, being a total of \$2,735.38. The receipts from this source the previous year were \$3,040.40, showing a decided falling off in receipts, due to the early closing of the stations; and the patronage at the stations at Thirteenth-and-a-half Street and Pennsylvania Avenue, and Ninth and K Streets, fell off nearly 30 per cent, and the total attendance at all three stations approximately 20 per cent, due to this same reason. The total woman patronage was about 24 per cent of the total, and they contributed about 11 per cent of the cash receipts. The great amount of usage to which these stations are put is indicated by the number of patrons served, and indicates a very general need of these at locations near all congested centers. The most important of these to be considered being Ninth and F or G Streets, Fifteenth Street and New York Avenue, Wisconsin Avenue and M Street, and near the Peace Monument. It is also desirable to erect several smaller stations where the traffic would justify them; but these stations, on account of being too small to require the constant services of an attendant, should be so located that they can be under more or less constant supervision by a park attendant or bridge watchman or similar employee. Such stations would be desirable at the Aqueduct Bridge, Calvert Street

Bridge, Seventh (or Ninth) Street and Florida Avenue NW., Fifteenth and H Streets NE., and several locations in or near Rock Creek Park. These stations could be built at reasonable cost, say \$5,000 or \$7,000, of plain design and with fixtures, fittings, and interiors of such material as to reduce the possibility of damage by irresponsible people to an almost negligible quantity. The larger stations first mentioned can not well be built at a less cost than \$20,000 each, and the station at Fifteenth Street and New York Avenue NW., on account of its necessary shape and special structural requirements, would probably cost \$25,000.

Relative to the construction of new stations, it is suggested that perhaps rental arrangements could be entered into with large office buildings at the suggested points for occupation of basements not at present in use, and the cost of construction thereby reduced to much smaller figure than estimated above, renting the necessary heating and ventilation service from the owners of the building. This would also reduce the cost of maintenance considerably, male attendance of a lower grade of intelligence being employed, as they would not have expensive mechanical equipment to look after as in the present stations.

The movement for the construction of public convenience stations is general throughout the country, all of the larger cities adding stations from time to time as their need appears. Even many of the smaller cities have one or more stations in their business centers, and the tendency is toward an increase in size and cost rather than otherwise.

This office would respectfully recommend that a definite policy of adding one station per year to the present equipment be entered into.

During the last year the General Government has completed one station in Potomac Park, of the smaller variety, and is at present engaged in constructing four more combined convenience stations and watchman's houses in various parks, which will relieve the situation to some extent and be of great convenience to the citizens.

In conclusion, I beg to commend to your consideration the conscientious work of the employees of this office, and to urge that an effort be made to have their salaries increased to a level with the salaries paid for similar work in other cities and a sum at least equal to that paid the journeyman plumber, whose work they supervise.

Very respectfully,

A. R. MCGONEGAL,

*Inspector of Plumbing.*

THE INSPECTOR OF BUILDINGS.

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### REPORT OF THE PLUMBING BOARD.

WASHINGTON, D. C., *September 15, 1913.*

SIR: I have the honor to submit the following statement of the work of the plumbing board during the fifteenth year of its organization:

Twenty-four sessions were held during the year for the examination of candidates for licensing as master plumbers and gas fitters; the total number of examinations held was 54.

The number of original candidates examined was 38, of whom 6 passed and 32 failed. The number of those reexamined was 16, of whom 3 passed and 13 failed. Included in the foregoing statement, 1 candidate for licensing as a master gas fitter passed on his first examination, and 2 failed.

By a recent act of Congress the salary of each member of the board was reduced from \$300 to \$150 per annum.

During the year the several amendments to the plumbing and gas-fitting regulations which have been recently promulgated, were considered jointly with the inspector of plumbing, and were unanimously concurred in.

Very respectfully,

PETER C. SCHAEFER, *President.*

RICHARD A. O'BRIEN, *Secretary.*

THE INSPECTOR OF BUILDINGS.

## REPORT OF THE MUNICIPAL ARCHITECT.

WASHINGTON, D. C., August 30, 1913.

SIR: I have the honor to forward herewith the fourth annual report of the office of the municipal architect for the fiscal year ending June 30, 1913.

During the year 8 buildings were under construction, as follows:

Building.	Appropriation available.	Cost.	Date of completion of work.
Pound and stable, health department, South Capitol Street, between H and I Streets SW.	Mar. 2, 1911	\$9,544	Sept. 19, 1912
Wire window and door guards.		45	Oct. 11, 1912
Manual Training School No. 172, O Street, between North Capitol and First Streets NW.	Mar. 2, 1911	39,451	Sept. 28, 1912
Electric conduit and wiring.		510	Oct. 3, 1912
Superficial grading.		914	Jan. 11, 1913
Stable, street cleaning department, Ninth, Tenth, N and O Streets NW.	Mar. 2, 1911	41,000	Oct. 23, 1912
Steel rolling doors.		1,812	Jan. 13, 1913
James Ormond Wilson Normal School No. 162, Eleventh and Harvard Streets NW.	Mar. 2, 1911	220,617	Dec. 2, 1912
Electrical work.		2,975	Oct. 22, 1912
Heating and ventilating.		21,810	Oct. 22, 1912
Conversion window into door.		42	Nov. 25, 1912
Steel door at west end of corridor, first floor.		70	Jan. 8, 1913
Completion temperature-regulation system.		900	Jan. 1, 1913
Wagon sheds, street cleaning department, stable, square No. 1043, G Street, between Thirteenth and Fourteenth Streets SE.	Mar. 2, 1911	4,598	Mar. 25, 1913
Pump house and lodge for water department, Eighteenth Street and Minnesota Avenue SE.		Water Department funds.	May 27, 1913
Extension colored men's ward and dining room, Home for the Aged and Infirm, Blue Plains, D. C.	July 1, 1911 June 26, 1912	20,337	Oct. 28, 1913
Electrical work.		450	
Normal School No. 169 (colored), Georgia Avenue, between Howard Place and Fairmont Street NW.	June 26, 1912	188,894	Feb. 21, 1914

## PLANS.

Due to the fact that the appropriations for buildings last year provided for about only one-third of the work authorized in each of the three preceding years, the office was able to bring all work up to date and to prepare plans in advance of the availability of the appropriations on July 1, 1913, and all buildings appropriated for are now under construction or in the process of advertisement for bids, excepting the new Central High School and the Colored High School, for which \$300,000 and \$150,000, respectively, are available in the appropriation act for the fiscal year 1914 to begin this work. From present indications the plans for the new Central High School will be completed in October, and those for the Colored High School early next spring.

The plans for the school buildings were prepared after consultation with the supervising principals and the principals of the schools, and the plans for the high schools have been the subject of frequent consultations with the superintendent of schools and the principals of the Central and Colored High Schools. The plans for the Colored Normal School were made to conform as nearly as possible with the written suggestions of the assistant superintendent of schools and the principal of the Normal School. The plans for the fire department building followed the suggestions of the chief of the fire department and his assistant, the superintendent of machinery. The plans for the market building and shelters carry out the ideas presented by the superintendent of markets and a special committee appointed to submit a general scheme and estimate for such work. The plans for the school buildings have been approved by the assistant to the engineer commissioner, the inspector of buildings, the chief of the fire department, and finally approved by the commissioners. The superintendent of schools has made frequent visits to this office to examine the plans and consult on details while the plans were being prepared. The chief of the fire department and the superintendent of markets have also cooperated in the preparation of plans before their completion. I respectfully suggest that this is the proper way to assist in the preparation of these plans—while they are in the formative state—as the plans, when completed, will have cost, for drafting services and materials, between \$500 and \$5,000, and if changes or alterations are made after their completion it will result in a loss of time and additional expense. The superintendent of schools and the heads of all departments for whom plans are being prepared have been advised when plans for the several buildings are started and requested to call at any time and make suggestions concerning them.

*Minor repairs and improvements.*

Building.	Work.	Date of advertisement.
Franklin School.....	Retubing two boilers.....	July 17, 1912
Ross School.....	Moving two portable buildings from Ross School to Park View School site.....	July 31, 1912
Workhouse (Ocoquan).....	Construction brick kilns.....	Aug. 2, 1912
John W. Ross School.....	Steam-heating system.....	Aug. 7, 1912
McKinley Manual Training School.....	Extension steel stack.....	Aug. 6, 1912
Orr School.....	Moving portable building from Orr School, Twining City, D. C., to grounds of Congress Heights School.....	Aug. 7, 1912
John W. Ross School.....	Construction passageway to James Ormond Wilson School.....	Aug. 9, 1912
District Library.....	Repair of elevator.....	Aug. 12, 1912
Western High School.....	Replacing defective tubes in boilers.....	Aug. 13, 1912
Tenley School.....	Retubing boilers.....	Aug. 14, 1912
Western High School.....	Construction of concrete steps, walks, etc., south entrance.....	Aug. 20, 1912
James Ormond Wilson School.....	Completion of temperature-regulating system.....	Sept. 11, 1912
District Library.....	Alterations in windows.....	Do
District Jail.....	Retubing boiler.....	Sept. 18, 1912
Cardozo Manual Training School.....	Conduit and wiring system for motors.....	Sept. 30, 1912
Pound and stable.....	Wire window and door guards.....	Do
Burrville School.....	Register faces in walls under step platform.....	Oct. 18, 1912
Military Road School.....	.....do.....	Do
Jos. Rodman West School.....	Gas engine to replace one installed.....	Oct. 24, 1912
Randle Highlands School.....	.....do.....	Do
Workhouse (old).....	Installation of wire guards.....	Oct. 29, 1912
Street-cleaning department stable, NW.....	Steel rolling doors.....	Oct. 31, 1912
Corcoran School.....	Moving portable building from Twenty-eighth and Olive streets to Petworth School site.....	Nov. 8, 1912
Manual Training School No. 172.....	Superficial grading, cement work, etc.....	Nov. 12, 1912
James Ormond Wilson School.....	Conversion of window into door on west terrace.....	Nov. —, 1912
Cordozo Manual Training School.....	Installation combination and electric fixtures.....	Nov. 20, 1912
James Ormond Wilson School.....	Installation steel doors at west end of corridor, first floor.....	Nov. 27, 1912
Central High School.....	Installation boiler breechings.....	Dec. 5, 1912
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump.....	Dec. 5, 1912
James Ormond Wilson Normal School.....	Cleaning all exterior and interior glass.....	Dec. —, 1912
Cardozo Manual Training School.....	Steel stack and breeching, forge connections and window guards.....	Dec. 27, 1912
Henry D. Cooke School.....	Electric-bell system.....	Dec. 28, 1912
Eastern Market.....	Installation fish box.....	Dec. —, 1912
John Eaton School.....	Installation electric-bell system.....	Dec. 28, 1912
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump.....	Dec. 30, 1912
Home for Aged and Infirm.....	Installation conduits, wires, and fixtures for electric-lighting system.....	Jan. 14, 1913
Normal School No. 169.....	Installation heating and ventilating system.....	Feb. 10, 1913
Armstrong Manual Training School.....	Erection fire escape in rear of gymnasium hall.....	Feb. 12, 1913
Repairs to police stations.....	Installation portable hot-air furnaces.....	Feb. 26, 1913
Stevens School.....	Installing reversible and adjustable windows in place of hung sash.....	Mar. 17, 1913
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump.....	Mar. 24, 1913
Business High School.....	Erection stairway.....	Apr. 5, 1913
Willow Tree Alley.....	Removal of all buildings in interior park, in square 534.....	Apr. 17, 1913
Grant School.....	Installing slate steps from basement floor to stair landing.....	Apr. 30, 1913
District Library.....	Remodeling 6 windows for hinging.....	May 1, 1913
Jefferson School.....	Installing slate treads on steps leading from first and second floors, on east and west stairway.....	May 6, 1913
Stevens School.....	Retubing 1 boiler.....	May 20, 1913
Force School.....	.....do.....	Do
Home for Aged and Infirm.....	Repairs and improvements to heating and lighting plant.....	June 1, 1913
Jefferson School.....	Installation of new heating system.....	June 19, 1913
Street-cleaning department stable NW.....	Installation of 6 ventilators.....	June 20, 1913
Public Library.....	Alterations in 8 windows in reference room.....	June 23, 1913
Brightwood School.....	Retubing boiler.....	June 30, 1913
Emery School.....	Retubing 2 boilers.....	Do
Garnet School.....	.....do.....	Do
Peabody School.....	.....do.....	Do
Wallach School.....	.....do.....	Do

## HEATING PLANT, HOME FOR THE AGED.

Plans and specifications were prepared and bids received for supplying the materials required for changes in the heating plant at the Home for the Aged and Infirm. This office recommended that a practical heating expert be placed in charge of this



work and a heating engineer was placed in charge for a few days, but the superintendent of the Home for the Aged requested me to remove this heating engineer in order that the work might be done under the immediate supervision of the superintendent of the home. He expressed a desire to save the expense of the engineer, as the funds for the work are barely sufficient for the labor and materials required in the changes.

TABLE SHOWING CUBIC COST OF BUILDINGS.

In the annual reports for previous years the cubic cost of District buildings has been given from the year 1897 to the year 1912, inclusive. The cost of the buildings erected during the past fiscal year and those now under construction, all but two of which were designed by the municipal architect, is as follows:

Building, name, number, description, and location.	Cost.	Cubic contents.	Cost per cubic foot.	Heating plan.	Architect.
James Ormond Wilson, Normal School No. 162, Eleventh and Harvard Streets NW.	\$245,402	<i>Fect.</i> 1,403,048	<i>Cents.</i> 17.49	Direct and indirect.	Municipal architect, District of Columbia.
Manual Training School No. 172, O Street NW., between North Capitol and First Streets.	39,961	253,015	15.79	.....do.....	Do.
Reconstruction of stable for street-cleaning department, Ninth, Tenth, N, and O Streets NW.	41,000	431,920	9.49	Steam direct.....	Do.
Pound and stable building for health department, South Capitol Street, between H and I Streets.	9,544	104,922	9.10	Stoves.....	Do.
Wagon sheds for street-cleaning department, G Street SE., between Thirteenth and Fourteenth Streets.	4,598	.....	.....	.....	Do.
Pump house and lodge for water department, corner Eighteenth Street and Minnesota Avenue SE.	11,189	113,809	9.83	.....	Water department, District of Columbia.
Extension colored men's ward and dining room at Home for Aged and Infirm, Blue Plains, D. C.	20,337 450	206,915	10.27	Direct-indirect....	Geo. O. Totten, jr.
Normal School Building No. 169 (colored), Georgia Avenue, between Howard Place and Fairmont Street NW.	170,024 17,870				
		1,279,471	14.91	{Fan system; indirect.	{L. E. Dess-.

In previous reports comparison was made with cost of similar buildings in other cities and with private work in this city, and, considering the character of the work and the extent to which fireproof materials are used in the construction of our buildings, they are more economical than the buildings in other cities.

It will be noticed that the plans for all the buildings in the foregoing tables, except two, were prepared in the office of the municipal architect. The question was raised in August, 1909, as to the authority to employ architects to assist in the preparation of plans, and the Comptroller of the Treasury rendered a decision August 18, 1909, to the effect that the duties of the municipal architect are supervisory and that he is permitted to employ outside architects to assist in the preparation of plans, and that he is to direct any expenditures necessary for and incidental to the preparation of such plans and the construction of the buildings.

#### HEATING PLANTS AND FUEL.

In the fall of 1909 this office instituted an inquiry as to the consumption of fuel in the public school buildings to develop any defects which might exist in the heating plants. For many years the expenditure for fuel and lighting has been about \$90,000 per annum; the municipal architect addressed an inquiry to the purchasing officer of the District as to the cost of fuel for each plant. The purchasing officer applied to the board of education for the desired information, but it was found that no record of this kind was available. The auditor of the District thereupon prepared a table showing the expenditure for fuel in the several school buildings for four consecutive years. It was thus ascertained that the consumption of fuel in buildings of practically the same

*Minor repairs and improvements.*

Building.	Work.	Date of advertisement.
Franklin School.....	Retubing two boilers.....	July 17, 1912
Ross School.....	Moving two portable buildings from Ross School to Park View School site.....	July 31, 1912
Workhouse (Ocoquan).....	Construction brick kilns.....	Aug. 2, 1912
John W. Ross School.....	Steam-heating system.....	Aug. 7, 1912
McKinley Manual Training School.....	Extension steel stack.....	Aug. 6, 1912
Orr School.....	Moving portable building from Orr School, Twining City, D. C., to grounds of Congress Heights School.....	Aug. 7, 1912
John W. Ross School.....	Construction passageway to James Ormond Wilson School..	Aug. 9, 1912
District Library.....	Repair of elevator.....	Aug. 12, 1912
Western High School.....	Replacing defective tubes in boilers.....	Aug. 13, 1912
Tenley School.....	Retubing boilers.....	Aug. 14, 1912
Western High School.....	Construction of concrete steps, walks, etc., south entrance..	Aug. 20, 1912
James Ormond Wilson School	Completion of temperature-regulating system.....	Sept. 11, 1912
District Library.....	Alterations in windows.....	Sept. 18, 1912
District Jail.....	Retubing boiler.....	Sept. 30, 1912
Cardozo Manual Training School.....	Conduit and wiring system for motors.....	Sept. 30, 1912
Pound and stable.....	Wire window and door guards.....	Do.
Burrville School.....	Register faces in walls under step platform.....	Oct. 13, 1912
Military Road School.....	do.....	Do.
Jos. Rodman West School.....	Gas engine to replace one installed.....	Oct. 24, 1912
Randle Highlands School.....	do.....	Do.
Workhouse (old).....	Installation of wire guards.....	Oct. 29, 1912
Street-cleaning department stable, N.W.....	Steel rolling doors.....	Oct. 31, 1912
Coreoran School.....	Moving portable building from Twenty-eighth and Olive streets to Petworth School site.....	Nov. 8, 1912
Manual Training School No. 172.....	Superficial grading, cement work, etc.....	Nov. 12, 1912
James Ormond Wilson School	Conversion of window into door on west terrace.....	Nov. —, 1912
Cardozo Manual Training School.....	Installation combination and electric fixtures.....	Nov. 20, 1912
James Ormond Wilson School	Installation steel doors at west end of corridor, first floor ..	Nov. 27, 1912
Central High School.....	Installation boiler breechings.....	Dec. 5, 1912
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump ..	Dec. 5, 1912
James Ormond Wilson Normal School.....	Cleaning all exterior and interior glass.....	Dec. —, 1912
Cardozo Manual Training School.....	Steel stack and breeching, forge connections and window guards.....	Dec. 27, 1912
Henry D. Cooke School.....	Electric-bell system.....	Dec. 28, 1912
Eastern Market.....	Installation fish box.....	Dec. —, 1912
John Eaton School.....	Installation electric-bell system.....	Dec. 28, 1912
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump ..	Dec. 30, 1912
Home for Aged and Infirm.....	Installation conduits, wires, and fixtures for electric-lighting system.....	Jan. 14, 1913
Normal School No. 169.....	Installation heating and ventilating system.....	Feb. 10, 1913
Armstrong Manual Training School.....	Erection fire escape in rear of gymnasium hall.....	Feb. 12, 1913
Repairs to police stations.....	Installation portable hot-air furnaces.....	Feb. 26, 1913
Stevens School.....	Installing reversible and adjustable windows in place of hung sash.....	Mar. 17, 1913
Engine House No. 20.....	Furnishing and installing 200-gallon gasoline tank and pump ..	Mar. 24, 1913
Business High School.....	Erection stairway.....	Apr. 5, 1913
Willow Tree Alley.....	Removal of all buildings in interior park, in square 534.....	Apr. 17, 1913
Grant School.....	Installing slate steps from basement floor to stair landing.....	Apr. 30, 1913
District Library.....	Remodeling 6 windows for hinging.....	May 1, 1913
Jefferson School.....	Installing slate treads on steps leading from first and second floors, on east and west stairway.....	May 6, 1913
Stevens School.....	Retubing 1 boiler.....	May 20, 1913
Force School.....	do.....	Do.
Home for Aged and Infirm.....	Repairs and improvements to heating and lighting plant.....	June 1, 1913
Jefferson School.....	Installation of new heating system.....	June 19, 1913
Street-cleaning department stable N.W.....	Installation of 6 ventilators.....	June 20, 1913
Public Library.....	Alterations in 8 windows in reference room.....	June 23, 1913
Brightwood School.....	Retubing boiler.....	June 30, 1913
Emery School.....	Retubing 2 boilers.....	Do.
Garnet School.....	do.....	Do.
Peabody School.....	do.....	Do.
Wallach School.....	do.....	Do.

## HEATING PLANT, HOME FOR THE AGED.

Plans and specifications were prepared and bids received for supplying the materials required for changes in the heating plant at the Home for the Aged and Infirm. This office recommended that a practical heating expert be placed in charge of this

work and a heating engineer was placed in charge for a few days, but the superintendent of the Home for the Aged requested me to remove this heating engineer in order that the work might be done under the immediate supervision of the superintendent of the home. He expressed a desire to save the expense of the engineer, as the funds for the work are barely sufficient for the labor and materials required in the changes.

TABLE SHOWING CUBIC COST OF BUILDINGS.

In the annual reports for previous years the cubic cost of District buildings has been given from the year 1897 to the year 1912, inclusive. The cost of the buildings erected during the past fiscal year and those now under construction, all but two of which were designed by the municipal architect, is as follows:

Building, name, number, description, and location.	Cost.	Cubic contents.	Cost per cubic foot.	Heating plan.	Architect.
James Ormond Wilson, Normal School No. 162, Eleventh and Harvard Streets NW.	\$245,402	<i>Feet.</i> 1,403,048	<i>Cents.</i> 17.49	Direct and indirect.	Municipal architect, District of Columbia.
Manual Training School No. 172, O Street NW., between North Capitol and First Streets.	39,961	253,015	15.79	.....do.....	Do.
Reconstruction of stable for street-cleaning department, Ninth, Tenth, N, and O Streets NW.	41,000	431,920	9.49	Steam direct.....	Do.
Pound and stable building for health department, South Capitol Street, between H and I Streets.	9,544	104,922	9.10	Stoves.....	Do.
Wagon sheds for street-cleaning department, G Street SE., between Thirteenth and Fourteenth Streets.	4,598	.....	.....	.....	Do.
Pump house and lodge for water department, corner Eighteenth Street and Minnesota Avenue SE.	11,189	113,809	9.83	.....	Water department, District of Columbia.
Extension colored men's ward and dining room at Home for Aged and Infirm, Blue Plains, D. C.	20,337 450	206,915	10.27	Direct-indirect....	Geo. O. Totten, jr.
Normal School Building No. 169 (colored), Georgia Avenue, between Howard Place and Fairmont Street NW.	170,024 17,870				
		1,279,471	14.91	{ Fan system; indirect.	{ L. E. Dessau.

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plan and design and similar with respect to arrangement and type of heating apparatus varied greatly; in some instances an 8-room building appeared to have consumed more than twice as much fuel as a similar building with the same size and type of apparatus. With this table as a basis, tests were made as to the capacities for fuel consumption at several of the buildings where the amount consumed appeared to be excessive. The following year a heating, ventilating, and sanitary engineer was employed, and the efficiency of the heating plants was more thoroughly inquired into.

The heating, ventilating, and sanitary engineer of this office has designed several plants with down-draft boilers and made other changes to encourage the use of soft coal, and at the same time to avoid the smoke nuisance. A central heating plant has been constructed with automatic stokers, guaranteed to prevent objectionable smoke while using soft coal. The grates in some plants are undergoing changes to better adapt them for soft coal, and other plants of this kind have been recommended and included in the estimates for appropriations.

The M Street central heating plant shows a saving, over the yearly average cost of fuel for four years prior to the construction of the plant, of \$634.06 per year. The Dent School, where down-draft boilers were installed, shows a saving of \$452.32 per year. The Reno School shows a saving of \$291.30 per year, on the hard-coal basis. The other buildings are not expected to show as great a saving, as the schools cited are not average cases.

#### YEARLY EXPENSES—PERSONAL SERVICES.

For the four years since the establishment of this office, the cost of buildings under construction and the expenses of the personal services have been as follows:

##### Cost of buildings, for fiscal year—

1910.....	\$920, 714. 00
1911.....	917, 890. 00
1912.....	1, 104, 237. 00
1913.....	282, 919. 00

Total cost of buildings for four years.....	3, 225, 760. 00
Average yearly cost in four years.....	806, 440. 00

##### Personal expenses, including architects' commissions, for fiscal year—

1910.....	31, 420. 00
1911.....	35, 186. 00
1912.....	33, 970. 00
1913.....	23, 942. 30

Total for the four years.....	124, 518. 30
Average yearly expense for the four years.....	31, 129. 58

The annual expenses are only 3.86 per cent on the cost of the buildings under construction in the four years. This includes commissions paid to architects to assist in the preparation of plans and hasten the completion of the work.

This very moderate cost will be better appreciated by comparison with the cost of similar establishments in other cities, and it is less than half the percentage cost for such work in many other offices, notwithstanding the fact that the unit cost of the Federal buildings is much higher than our municipal buildings. But these results are due to the very low salaries paid in this office for high-class work. The architects in other large cities, whose work and positions correspond to that of the municipal architect, receive twice the salary of the municipal architect. The office, by making most of the plans, accomplishes an annual saving of \$17,256.82 over the cost of the work if done by private architects, and as the average yearly expenditure for architects' commissions is but \$5,747.20, the saving, if all plans are made in this office, would be about \$23,000. The inspection expenses, in addition to the standard charges for architects' services, would amount to \$10,000 per annum.

I beg to invite attention to the salary paid the chief draftsman (\$1,700). Such a position in other cities would afford at least twice the salary, and the designer in the supervising architect's office is appropriated for at \$6,000 per annum. Another notable example is the heating, ventilating, and sanitary engineer (\$2,000). This position was open nearly two years, being for one year on the per diem basis, before a suitable man could be found, and then only with the understanding that he might continue his literary work for technical publications and act as consulting engineer for private work. The men in this office are not connected in any way with the enforcement of the building regulations or the approval of plans, and as long as the

present salaries are paid we can not expect to retain capable men unless they are permitted to do outside work which will not interfere in any way with the office work. The Civil Service Commission is now seeking a man for such a position, at a salary between \$3,000 and \$4,600, and the "Public buildings" act contains an appropriation of \$5,000 for such an engineer in the Treasury Department.

#### ORGANIZATION OF OFFICE.

This office is but 4 years old, and one of the first tasks undertaken was to arrange for a small and well balanced force. The work of the office is in three divisions: (1) Architectural design and office work; (2) construction of new buildings; and (3) repair of older buildings. Whenever possible, positions have been filled by transfer or promotion, and from a very small nucleus of eight men in 1909, the force has been but slightly increased by employing per diem men as their services were required and placing them on the annual rolls by acts of Congress as soon as their continuous services were found to be necessary. In this way the office has developed with the requirements of the work, and consequently it does not contain a single unnecessary position. From year to year more and more work, which had formerly been done by contract or outside parties, has been undertaken by the District employees, thus saving the large profits on such work as plumbing, sheet-metal work, blacksmithing, machine work, etc. It has been found that the former profits on the plumbing alone will pay the mechanics' wages on that branch. A machine shop has been equipped with discarded machines from other branches of the District service and promises to make a marked saving in repairs to engines and heating apparatus. A foundry is much needed, but it should, I think, be a general foundry for the entire District government, as the work at one shop is not yet sufficient to keep it in continuous operation.

#### CHARTS SHOWING THE ORGANIZATION.

Charts were prepared showing the work as subdivided in the three branches previously mentioned and explaining the nature of the work performed by each branch and the duties of each employee. These charts also show the relative importance of each position and the routine for reports. Another chart shows the organization from a monetary standpoint. The names of the employees are arranged according to their salary ratings in vertical columns, the annual and per diem men in separate columns, so that the salary cost of each branch of the work is shown at the foot of the column, thus:

All the inspectors employed on the construction of buildings last year cost.	\$2, 925. 00
Office force on per diem roll.....	2, 710. 25
Office force on annual roll.....	12, 000. 00
Repair-shop force on annual roll.....	12, 850. 00
<b>Total cost of services for year.....</b>	<b>30, 485. 25</b>

A third chart shows all work, except repairs, appropriated for and under the charge of this office. This chart or schedule gives the date of the appropriation, the location of the work, cost of site, amount of the appropriation for the building, date on which plans were started and date when finished, when specifications were sent to printer and when returned, date of advertisement and time of receiving proposals, date of acceptance of proposals, contract price, contract number and date of contract, time of beginning work, expiration of contract time, and date when work was actually finished. From this schedule or chart each and every piece of work can be accounted for, from the appropriation to the final acceptance of the finished structure.

Besides these charts, cards of instruction are issued to the inspectors as well as forms for daily reports from each building, showing the progress and quality of work and materials. The inspectors on each building are under daily supervision of the superintendent of construction, and their weekly reports pass through his hands to the municipal architect and then to the engineer commissioner. If the local inspector should overlook any requirement of the contract, the superintendent will report it to the municipal architect. It has been the practice of the office to exchange inspectors on the buildings so that the standard of work may be uniformly maintained on all buildings.

Before any payments are made on the work a complete cost measurement of the building is made, giving the quantities entering into the construction and unit costs of each. These items are totaled to come within the contract price, and this measurement sheet is checked by the superintendent of construction, and after approval by the municipal architect becomes the basis of all payments, and the exact amount of work performed at the time of each payment is shown on the measurement sheet. Ten per cent of each payment is held back until the work is completed.

## COST OF REPAIRS.

In the annual report of last year and the year before the costs of repairs were given in comparison with such costs in other cities of nearly equal importance and size. These costs have been reduced to the cost per square foot of floor surface, cost per building, per room, and per pupil on average attendance. The cost has also been figured in ratio to the entire costs of the schools in this and other cities, and from these figures it appears that Washington is next to the lowest in cost of repairs, notwithstanding the fact that we are here at a disadvantage in cost comparisons for the reason that in other cities the actual "repairs"—that is, replenishments—are paid from one fund, while the "improvements"—that is, enlargements or changes or betterments—are paid from another fund, while here all those things are charged to "repairs." This, of course, makes it appear at first sight that our repairs cost more than they really do.

I beg to call attention to the form used by the Bureau of the Census for collecting data concerning the cost of "repairs" separate from the "outlays" and the "equipment."

The report of the Bureau of Education for 1911 and 1912, issued in 1913, gives very extensive tables showing the relative cost of the schools and cost of buildings, repairs, and betterments in most all cities of 10,000 inhabitants or over, but it was a source of surprise and disappointment to find that such figures are not given in the report for the National Capital.

## ORGANIZATION OF REPAIR SHOP AND CHECKS ON TIME AND MATERIALS.

The repair shop is under the direct supervision of the superintendent of repairs with an assistant superintendent, two clerks, and a copyist as an office force to keep all accounts, issue materials, and check up the time of mechanics and keep stock accounts. The mechanics, or outside force, are under the supervision of six men called "bosses," one for each important branch of the work. Under these men the mechanics and laborers employed by the day work on about 300 buildings belonging to the District. Material is issued on the requisition of these "bosses" or foremen and charged to the buildings to be repaired. These orders are made in duplicate, and as the stock is issued it is charged on the stock account. The superintendent of repairs inspects the work as often as possible, to obtain good work and proper use of materials. I have in several reports requested better means of transportation for the "bosses" or foremen, who should visit the numerous buildings where gangs are at work to see that it is industriously attended to. At times there are over 200 mechanics employed, or more than 35 men for each boss to look after. These men may be in six or seven gangs and at buildings widely separated, so that any improvement in the transportation of the bosses would evidently result in greater dispatch and better work.

Each mechanic, when sent out, is given a post card directed to the superintendent of repairs. This card has blanks for time of arriving at the work and time of leaving the work, which the mechanic signs and refers to the caretaker at the building where the work is performed. The caretaker certifies on the card. This card is mailed at the end of the workday and forms a basis for the pay rolls. The bosses also keep a general check on the time of the men under them.

I have had this system and the stock accounts looked over by the deputy auditor and chief clerk of the office of the Auditor for State and Other Departments, and they can not suggest improvement in the system without adding more clerks and additional expense. It is my belief that the materials and time are properly safeguarded.

The report of the superintendent of repairs will show the cost of repairs at each building and the branches of work and cost of each branch; also the total cost, and what proportion was for labor and what for materials. Monthly statements are made and submitted to the municipal architect, showing the amounts expended on each appropriation.

SNOWDEN ASHFORD,  
*Municipal Architect, District of Columbia.*

Lieut. Col. CHESTER HARDING,  
Corps of Engineers, U. S. Army,  
Engineer Commissioner, D. C.

## REPORT OF THE SUPERINTENDENT OF REPAIRS.

SIR: I have the honor to forward herewith my annual report of the work done by this office during the fiscal year ending June 30, 1913.

The appropriation of \$85,000 for repairs and improvements to school buildings and grounds, heating apparatus, etc., was not sufficient to make repairs necessary to properly preserve the school buildings. Every effort has been made to make repairs to the

buildings where most needed to keep them from deteriorating to an extent to cause criticism, and in all cases irrespective of the occupants of such buildings.

The demands for repairs are constantly growing, as the number of buildings has greatly increased in the past few years, yet the amount appropriated for their repair is practically the same each year. This condition is responsible for the serious problem that confronts this office as to the expenditure of the funds satisfactorily to all concerned. If this office attempted to make the repairs and changes requested on the annual repair sheets it would require more than double the amount appropriated by Congress.

During the past year a large per cent of the appropriation for repairs to school buildings was spent on heating apparatus alone. During the present fiscal year it will be necessary to use a much larger amount to replace broken and worn-out parts of furnaces, etc. In addition to this several of the larger heating plants must be completely renovated, and some of the older ones are now being replaced, which will require an expenditure of approximately 20 per cent of the total repair fund. It can be readily seen that this greatly depletes the funds out of which much other very important work must be paid for.

If the present appropriation of \$100,000 for repairs and improvements to school buildings and grounds, for repairing and renewing heating and ventilating apparatus and repairs to plumbing, etc., was available for use for repairs and improvements to buildings and grounds, etc., and an additional amount be appropriated sufficient to care for the heating plants, much better results in all directions could be obtained. Some of the plants now in use have already deteriorated so much from age and are in need of such constant and thorough repairs that in my opinion it would be considerably cheaper if they were replaced, yet this is an impossibility owing to the fact that the appropriations are already entirely too small to meet the demands.

For this reason, I earnestly recommend that Congress be importuned to make an appropriation to care for this very important item.

The appropriation of \$25,000 for fire protection has been expended in improving the condition of exits and basements. At present practically all of the work of this character has been completed except some of the basements which should be provided with metal ceilings.

In my estimates for 1915 I am again requesting that the amounts of the several appropriations under my charge be increased. The number of buildings, repairs, and improvements which I am called upon to care for are constantly growing, and it is utterly impossible to perform this additional work year after year for practically the same amount. The additional small sums granted by Congress in the past have been entirely inadequate to render the services demanded.

There is, on present estimated values, about \$11,000,000 invested in school buildings, grounds, and equipments, yet less than 1 per cent is appropriated for repairs.

The percentage of rentals allowed by private corporations for the repair and upkeep of their property far exceeds that appropriated for repairs to school buildings, notwithstanding school buildings are subjected to harder use and should therefore be allowed a greater amount for repairs than that of private buildings.

New floors, replacing broken glass, resurfacing of blackboards, repair of roofs and heating plants are items that draw heavily upon the appropriation and are of such a nature as to make their repair imperative.

Sanitary drinking fountains are being installed as rapidly as possible; the old drinking cup having been pronounced unsanitary by the health officer, and is theoretically dangerous.

I would respectfully renew my recommendation of last year that Congress be asked to make all appropriations used by this office, especially those for repairs to school buildings, immediately available. This will enable me to commence the repair work on school buildings the day following the closing of school.

The majority of the repairs are to the interior of the classrooms, such as the repair of windows, floors, etc., and when the appropriations become available July 1, it is practically impossible to purchase material and have it delivered to the buildings and secure a sufficient force of mechanics to complete the work before the opening of the fall season of school. This condition also refers to the heating apparatus which are required to be in operation by the opening of school, as it is difficult to work on these plants during school hours. By this arrangement, also, the foremen can be in closer touch with their men and secure a better class of work economically.

The following is a detailed statement of the work done under my supervision.

Respectfully,

HENRY STOREY,  
*Superintendent of Repairs, District of Columbia.*

The MUNICIPAL ARCHITECT.

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913.*

[Appropriation, \$85,000.]

Class of work.	Labor.	Material.	Contract.	Total.
<b>Abbot School, No. 27:</b>				
Carpentering.....	\$9.35	\$1.40	.....	\$10.75
Painting.....	15.47	4.16	.....	19.63
Tinning.....	11.31	4.48	.....	15.79
Plumbing.....	3.00	1.10	.....	4.10
Heating.....	.....	.....	\$9.49	9.49
Miscellaneous.....	10.75	1.22	.....	11.97
Material drawn by janitor.....	.....	.62	.....	.62
<b>Total.....</b>	<b>49.88</b>	<b>12.98</b>	<b>9.49</b>	<b>72.35</b>
<b>Adams School, No. 65:</b>				
Carpentering.....	72.32	30.49	.....	102.81
Painting.....	100.52	14.61	.....	115.13
Tinning.....	13.71	7.30	.....	21.01
Plumbing.....	4.56	3.29	.....	7.85
Heating.....	.....	.....	6.20	6.20
Material drawn by janitor.....	.....	.02	.....	.02
<b>Total.....</b>	<b>191.11</b>	<b>55.71</b>	<b>6.20</b>	<b>253.02</b>
<b>Addison School, No. 53:</b>				
Carpentering.....	57.20	82.88	.....	140.08
Painting.....	17.32	5.81	.....	23.13
Tinning.....	12.59	3.67	.....	16.26
Plumbing.....	6.00	.....	.....	6.00
Heating.....	.....	.78	.....	.78
Material drawn by janitor.....	.....	2.28	.....	2.28
<b>Total.....</b>	<b>93.11</b>	<b>95.42</b>	.....	<b>188.53</b>
<b>Ambush School, No. 79:</b>				
Carpentering.....	175.41	25.47	.....	200.88
Painting.....	17.28	6.53	.....	23.81
Tinning.....	56.91	47.25	.....	104.16
Plumbing.....	20.00	3.05	.....	23.05
Heating.....	.....	.....	38.20	38.20
<b>Total.....</b>	<b>269.60</b>	<b>82.30</b>	<b>38.20</b>	<b>390.10</b>
<b>Amidon School, No. 42:</b>				
Carpentering.....	143.85	193.12	.....	336.97
Painting.....	92.10	24.44	.....	116.54
Tinning.....	67.66	139.43	.....	207.09
Plumbing.....	10.50	.36	.....	10.86
Gas engine.....	42.60	4.28	.....	46.88
Material drawn by janitor.....	.....	3.00	.....	3.00
<b>Total.....</b>	<b>356.71</b>	<b>364.63</b>	.....	<b>721.34</b>
<b>Armstrong Manual Training School, No. 129:</b>				
Carpentering.....	21.69	9.36	.....	31.05
Painting.....	19.32	5.57	.....	24.89
Tinning.....	69.84	43.65	.....	113.49
Plumbing.....	81.00	22.67	.....	103.67
Steam fitting.....	22.51	15.82	.....	38.33
Grading.....	33.00	.89	.....	33.89
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	26.97	.....	26.97
<b>Total.....</b>	<b>257.98</b>	<b>125.85</b>	.....	<b>383.83</b>
<b>Arthur School, No. 70:</b>				
Carpentering.....	15.00	3.13	.....	18.13
Painting.....	22.02	9.74	.....	31.76
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	13.50	.....	.....	13.50
Heating.....	11.63	1.77	36.11	49.51
Material drawn by janitor.....	.....	3.60	.....	3.60
<b>Total.....</b>	<b>71.80</b>	<b>20.80</b>	<b>36.11</b>	<b>128.71</b>



*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Banneker School, No. 39:</b>				
Carpentering.....	\$144.15	\$358.54	.....	\$502.69
Painting.....	82.94	18.70	.....	101.64
Tinning.....	41.15	23.79	.....	64.94
Plumbing.....	9.75	.49	.....	10.24
Heating.....	.....	.....	\$15.66	15.66
Gas engine.....	31.70	16.27	.....	47.97
Material drawn by janitor.....	.94	3.50	.....	3.50
<b>Total.....</b>	<b>309.69</b>	<b>421.29</b>	<b>15.66</b>	<b>746.64</b>
<b>Bates Road, No. 13:</b>				
Carpentering.....	4.13	5.80	.....	9.93
<b>Bell School, No. 78:</b>				
Carpentering.....	47.94	4.60	.....	52.54
Painting.....	16.23	15.14	.....	31.37
Plumbing.....	2.25	.19	.....	2.44
Heating.....	.56	.....	17.44	18.00
Miscellaneous.....	.94	.35	.....	1.32
<b>Total.....</b>	<b>67.92</b>	<b>20.31</b>	<b>17.44</b>	<b>105.67</b>
<b>Benning School, No. 48:</b>				
Carpentering.....	127.20	32.99	.....	160.19
Painting.....	9.63	4.00	.....	13.63
Tinning.....	39.27	37.09	.....	76.36
Plumbing.....	.75	.....	.....	.75
Steam fitting.....	7.88	.75	.....	8.63
Grading.....	146.47	8.39	.....	154.86
Miscellaneous.....	10.62	.92	.....	11.54
<b>Total.....</b>	<b>341.82</b>	<b>84.14</b>	.....	<b>425.96</b>
<b>Berret School, No. 66:</b>				
Carpentering.....	92.85	20.28	.....	113.13
Painting.....	6.66	3.73	.....	10.39
Tinning.....	20.65	6.69	.....	27.34
Plumbing.....	36.81	72.42	.....	109.23
Heating.....	1.38	.....	18.21	19.59
<b>Total.....</b>	<b>158.35</b>	<b>103.12</b>	<b>18.21</b>	<b>279.68</b>
<b>Birney School, No. 127:</b>				
Carpentering.....	65.50	8.49	.....	73.99
Painting.....	16.91	6.56	.....	23.47
Tinning.....	40.15	13.46	.....	53.61
Plumbing.....	235.13	164.78	.....	399.91
Heating.....	.....	.....	28.91	28.91
Gas engine.....	23.08	4.41	.....	27.49
Material drawn by janitor.....	.....	.39	.....	.39
<b>Total.....</b>	<b>380.77</b>	<b>198.09</b>	<b>28.91</b>	<b>607.77</b>
<b>Birney Annex, No. 74:</b>				
Carpentering.....	48.45	19.49	.....	67.94
<b>Blair School, No. 50:</b>				
Carpentering.....	189.25	148.57	.....	337.82
Painting.....	24.24	12.36	.....	36.60
Tinning.....	30.41	40.43	.....	70.84
Plumbing.....	6.75	1.82	.....	8.57
Heating.....	1.50	.....	20.93	22.43
Gas engine.....	23.95	.92	.....	24.87
Material drawn by janitor.....	.....	1.71	.....	1.71
<b>Total.....</b>	<b>276.10</b>	<b>205.81</b>	<b>20.93</b>	<b>502.84</b>
<b>Blake School, No. 61:</b>				
Carpentering.....	53.81	100.54	.....	154.35
Painting.....	24.14	9.44	.....	33.58
Tinning.....	137.54	135.54	.....	273.08
Plumbing.....	24.75	2.04	.....	26.79
Heating.....	.44	.....	15.03	15.47
Material drawn by janitor.....	.....	1.47	.....	1.47
<b>Total.....</b>	<b>240.68</b>	<b>249.03</b>	<b>15.03</b>	<b>504.74</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Blow School, No. 145:</b>				
Carpentering.....	\$14.88	\$7.14	.....	\$22.02
Painting.....	14.12	4.90	.....	19.02
Tinning.....	29.72	5.19	.....	34.91
Plumbing.....	23.50	.86	.....	24.36
Heating.....	.....	.78	.....	.78
Motor.....	.63	.04	.....	.67
<b>Total.....</b>	<b>82.85</b>	<b>18.91</b>	<b>.....</b>	<b>101.76</b>
<b>A. Bowen School, No. 109:</b>				
Carpentering.....	4.00	.25	.....	4.25
Painting.....	9.20	2.94	.....	12.14
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	1.00	.....	.....	1.00
Heating.....	1.38	.44	\$45.41	47.23
Gas engine.....	18.13	6.64	.....	24.67
<b>Total.....</b>	<b>43.36</b>	<b>12.73</b>	<b>45.41</b>	<b>101.50</b>
<b>S. J. Bowen School, No. 123:</b>				
Carpentering.....	30.19	5.39	.....	35.58
Painting.....	107.75	24.07	.....	131.82
Tinning.....	101.41	48.80	.....	150.21
Plumbing.....	174.57	42.19	.....	216.76
Heating.....	94.75	38.38	.....	133.13
Steam fitting.....	71.14	30.16	.....	101.30
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.34	.....	1.34
<b>Total.....</b>	<b>500.43</b>	<b>191.25</b>	<b>.....</b>	<b>781.68</b>
<b>Bradley School, No. 60:</b>				
Carpentering.....	44.75	11.98	.....	56.73
Painting.....	40.68	11.42	.....	52.10
Tinning.....	150.91	120.03	.....	270.94
Plumbing.....	89.00	17.01	.....	106.01
Heating.....	.....	.....	29.14	29.14
<b>Total.....</b>	<b>325.34</b>	<b>160.44</b>	<b>29.14</b>	<b>514.92</b>
<b>Brent School, No. 46:</b>				
Carpentering.....	159.32	223.41	.....	382.73
Painting.....	45.61	12.03	.....	57.64
Tinning.....	83.10	30.76	.....	113.86
Plumbing.....	15.00	3.06	.....	18.06
Heating.....	.....	.....	2.17	2.17
Gas engine.....	75.45	17.22	.....	92.67
Material drawn by janitor.....	.....	10.82	.....	10.82
<b>Total.....</b>	<b>378.48</b>	<b>297.30</b>	<b>2.17</b>	<b>677.95</b>
<b>Briggs School, No. 75:</b>				
Carpentering.....	7.50	1.60	.....	9.10
Painting.....	15.13	6.08	.....	21.21
Tinning.....	43.78	25.11	.....	68.89
Plumbing.....	3.75	.20	.....	3.95
Heating.....	4.82	.69	125.16	130.67
Material drawn by janitor.....	.....	4.06	.....	4.06
<b>Total.....</b>	<b>74.98</b>	<b>37.74</b>	<b>125.16</b>	<b>237.88</b>
<b>Brightwood School, No. 104:</b>				
Carpentering.....	21.00	11.51	.....	32.51
Painting.....	12.13	4.53	.....	16.66
Tinning.....	12.40	2.93	.....	15.33
Plumbing.....	1.50	.....	.....	1.50
Steam fitting.....	16.82	9.73	.....	26.55
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	.93	.....	.93
<b>Total.....</b>	<b>74.47</b>	<b>30.55</b>	<b>.....</b>	<b>105.02</b>
<b>Brightwood Park School, No. 151:</b>				
Carpentering.....	6.00	6.99	.....	12.99
Painting.....	5.19	1.40	.....	6.59
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	9.50	2.18	.....	11.68
Gas engine.....	42.51	3.32	.....	45.83
<b>Total.....</b>	<b>72.85</b>	<b>16.45</b>	<b>.....</b>	<b>89.30</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Brookland School, No. 103:</b>				
Carpentering.....	\$91.00	\$101.33	.....	\$192.33
Painting.....	112.67	39.81	.....	152.48
Tinning.....	202.96	270.13	.....	473.09
Plumbing.....	26.82	10.54	.....	37.36
Steam fitting.....	150.13	103.03	.....	253.16
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....		1.63	.....	1.63
<b>Total.....</b>	<b>594.20</b>	<b>527.39</b>	<b>.....</b>	<b>1,121.59</b>
<b>Bruce School, No. 112:</b>				
Carpentering.....	5.00	.07	.....	5.07
Painting.....	111.73	28.48	.....	140.21
Tinning.....	84.90	22.68	.....	107.58
Plumbing.....	4.25	2.50	.....	6.75
Heating.....			\$2.94	2.94
Gas engine.....	47.77	13.53	.....	61.30
Material drawn by janitor.....		1.71	.....	1.71
<b>Total.....</b>	<b>253.65</b>	<b>68.97</b>	<b>2.94</b>	<b>325.56</b>
<b>Bryan School, No. 155:</b>				
Carpentering.....	78.89	33.99	.....	112.88
Painting.....	219.21	65.62	.....	284.83
Tinning.....	181.16	45.08	.....	226.24
Plumbing.....	12.75	.18	.....	12.93
Heating.....	54.25	27.95	.....	82.20
Gas engine.....	38.65	15.57	.....	54.22
Grading.....	6.50		.....	6.50
<b>Total.....</b>	<b>591.41</b>	<b>188.39</b>	<b>.....</b>	<b>779.80</b>
<b>Buchanan School, No. 96:</b>				
Painting.....	81.59	12.47	.....	94.06
Tinning.....	35.15	20.84	.....	55.99
Plumbing.....	5.00	2.82	.....	7.82
Heating.....	.38		173.51	173.89
Grading.....	101.66		.....	101.66
Material drawn by janitor.....		3.55	.....	3.55
<b>Total.....</b>	<b>223.78</b>	<b>39.68</b>	<b>173.51</b>	<b>436.97</b>
<b>Bunker Hill School, No. 47:</b>				
Carpentering.....	310.17	80.90	.....	391.07
Painting.....	11.82	6.74	.....	18.56
Tinning.....	201.03	123.91	.....	324.94
Plumbing.....	287.06	746.80	.....	1,033.86
Heating.....			26.60	26.60
<b>Total.....</b>	<b>810.08</b>	<b>958.35</b>	<b>26.60</b>	<b>1,795.03</b>
<b>Burrville School, No. 91:</b>				
Carpentering.....	12.31	12.48	.....	24.79
Tinning.....	11.03	2.91	.....	13.94
<b>Total.....</b>	<b>23.34</b>	<b>15.39</b>	<b>.....</b>	<b>38.73</b>
<b>Business High School, No. 141:</b>				
Carpentering.....	5.10	4.12	.....	9.22
Painting.....	52.69	14.46	.....	67.15
Tinning.....	76.73	38.90	.....	115.63
Plumbing.....	42.25	8.02	.....	50.27
Steam fitting.....	91.70	105.58	.....	197.28
Miscellaneous.....	10.62	.92	12.00	23.54
Material drawn by janitor.....		4.12	.....	4.12
<b>Total.....</b>	<b>279.09</b>	<b>176.12</b>	<b>12.00</b>	<b>467.21</b>
<b>Carbery School, No. 58:</b>				
Carpentering.....	93.19	108.79	.....	201.98
Painting.....	18.06	4.88	.....	22.94
Tinning.....	58.72	36.78	.....	95.50
Plumbing.....	12.75	27.21	.....	39.96
Heating.....		.50	103.88	104.38
Material drawn by janitor.....		2.67	.....	2.67
<b>Total.....</b>	<b>182.72</b>	<b>180.83</b>	<b>103.88</b>	<b>467.43</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Cardoza School, No. 148:</b>				
Painting.....	\$23.32	\$15.43	.....	\$38.75
Tinning.....	38.21	18.70	.....	56.91
Plumbing.....	7.00	1.12	.....	8.12
Heating.....	.....	.....	\$18.83	18.83
Gas engine.....	54.38	24.97	.....	79.35
Miscellaneous.....	7.12	.81	.....	7.93
Total.....	130.03	61.03	18.83	209.89
<b>Cardoza Manual-Training School, No. 168:</b>				
Painting.....	2.69	1.80	.....	4.49
Plumbing.....	12.00	14.11	.....	26.11
Heating.....	6.00	.63	.....	6.63
Total.....	20.69	16.54	.....	37.23
<b>Central High School, No. 43:</b>				
Carpentering.....	339.43	114.01	.....	453.44
Painting.....	95.89	31.94	.....	127.83
Tinning.....	132.92	91.02	.....	223.94
Plumbing.....	106.69	12.68	.....	119.37
Steam fitting.....	283.28	64.72	.....	348.00
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	22.85	.....	22.85
Total.....	968.83	338.14	.....	1,306.97
<b>Chain Bridge Road School, No. 6:</b>				
Carpentering.....	24.57	14.86	.....	39.43
Painting.....	1.87	1.16	.....	3.03
Tinning.....	9.65	2.56	.....	12.21
Total.....	36.09	18.58	.....	54.67
<b>Chevy Chase School, No. 113:</b>				
Painting.....	198.72	28.09	.....	226.81
Tinning.....	124.06	52.60	.....	176.66
Heating.....	.....	.....	193.13	193.13
Grading.....	23.75	.....	.....	23.75
Total.....	346.53	80.69	193.13	620.35
<b>Cleveland School, No. 165:</b>				
Carpentering.....	28.29	10.31	.....	38.60
Painting.....	25.82	8.09	.....	33.91
Plumbing.....	7.75	.01	.....	7.76
Heating.....	.....	.....	15.27	15.27
Motor.....	7.12	5.22	.....	12.34
Miscellaneous.....	6.61	.....	.....	6.61
Total.....	75.59	23.63	15.27	114.49
<b>Conduit Road School, No. 25:</b>				
Carpentering.....	90.19	92.67	.....	182.86
Painting.....	13.90	9.95	.....	23.85
Tinning.....	19.47	8.43	.....	27.90
Total.....	123.56	111.05	.....	234.61
<b>Congress Heights School, No. 111:</b>				
Carpentering.....	10.91	9.32	.....	20.23
Painting.....	17.28	6.05	.....	23.33
Tinning.....	21.71	6.34	.....	28.05
Plumbing.....	10.50	.23	.....	10.73
Heating.....	6.38	3.87	24.80	35.05
Material drawn by janitor.....	.....	2.60	.....	2.60
Total.....	66.78	28.41	24.80	119.99
<b>Congress Heights annex:</b>				
Carpentering.....	18.35	5.20	.....	23.55

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>J. F. Cook School, No. 30:</b>				
Carpentering.....	\$8.00	\$1.33	.....	\$9.33
Painting.....	43.22	5.04	.....	48.26
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	10.50	.07	.....	10.57
Heating.....	.38	.....	\$93.23	93.61
Gas engine.....	35.83	6.69	.....	42.52
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>107.58</b>	<b>16.42</b>	<b>93.23</b>	<b>217.23</b>
<b>H. D. Cooke School, No. 154:</b>				
Painting.....	13.75	4.41	.....	18.16
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	4.50	.....	.....	4.50
Heating.....	4.44	36.94	.....	41.38
Gas engine.....	17.57	7.95	.....	25.52
Material drawn by janitor.....	.....	.89	.....	.89
<b>Total.....</b>	<b>49.91</b>	<b>52.75</b>	.....	<b>102.66</b>
<b>Corcoran School, No. 68:</b>				
Carpentering.....	15.50	1.94	.....	17.44
Painting.....	137.02	24.59	.....	161.61
Tinning.....	137.47	143.54	.....	281.01
Heating.....	1.50	.....	102.92	104.42
Material drawn by janitor.....	.....	2.67	.....	2.67
<b>Total.....</b>	<b>291.49</b>	<b>172.74</b>	<b>102.92</b>	<b>567.15</b>
<b>Cranch School, No. 137:</b>				
Carpentering.....	9.00	1.47	.....	10.47
Painting.....	157.69	41.03	.....	198.72
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	1.56	1.37	.....	2.93
Steam fitting.....	28.57	7.24	.....	35.81
Miscellaneous.....	23.00	1.87	.....	24.87
<b>Total.....</b>	<b>229.47</b>	<b>55.54</b>	.....	<b>285.01</b>
<b>Crummell School, No. 167:</b>				
Carpentering.....	123.19	1.94	.....	125.13
Painting.....	36.54	16.12	.....	52.66
Heating.....	.....	.....	6.97	6.97
<b>Total.....</b>	<b>159.73</b>	<b>18.06</b>	<b>6.97</b>	<b>184.76</b>
<b>Curtis School, No. 26:</b>				
Carpentering.....	25.64	34.58	.....	60.22
Painting.....	30.75	32.85	.....	63.70
Tinning.....	13.09	5.08	.....	18.17
Plumbing.....	3.00	.....	.....	3.00
Steam fitting.....	80.86	32.44	.....	113.30
Miscellaneous.....	10.62	.92	.....	11.54
<b>Total.....</b>	<b>163.96</b>	<b>105.97</b>	.....	<b>269.93</b>
<b>Deanwood School, No. 152:</b>				
Carpentering.....	31.00	14.98	.....	45.98
Painting.....	72.71	18.12	.....	90.83
Tinning.....	45.03	36.92	.....	81.95
Heating.....	.....	.....	194.99	194.99
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>148.74</b>	<b>70.75</b>	<b>194.99</b>	<b>414.48</b>
<b>Dennison School, No. 52:</b>				
Carpentering.....	60.76	37.52	.....	98.28
Painting.....	79.36	16.35	.....	95.71
Tinning.....	87.15	57.89	.....	145.04
Plumbing.....	4.50	.05	.....	4.55
Steam fitting.....	73.32	18.94	.....	92.26
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.09	.....	1.09
<b>Total.....</b>	<b>315.71</b>	<b>132.76</b>	.....	<b>448.47</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Dent School, No. 120:</b>				
Carpentering.....	\$263.19	\$93.98	.....	\$357.17
Painting.....	144.73	38.89	.....	183.62
Tinning.....	283.13	98.26	.....	381.39
Plumbing.....	48.31	20.51	\$36.50	105.32
Gas engine.....	45.77	28.34	.....	74.11
Steam fitting.....	534.46	436.25	.....	970.71
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.42	.....	1.42
<b>Total.....</b>	<b>1,330.21</b>	<b>718.57</b>	<b>36.50</b>	<b>2,085.28</b>
<b>Douglas School, No. 99:</b>				
Carpentering.....	6.50	.....	.....	6.50
Painting.....	12.84	5.70	.....	18.54
Tinning.....	23.03	5.05	.....	28.08
Plumbing.....	1.50	.54	.....	2.04
<b>Total.....</b>	<b>43.87</b>	<b>11.29</b>	.....	<b>55.16</b>
<b>Eastern High School, No. 85:</b>				
Carpentering.....	449.70	617.96	.....	1,067.66
Painting.....	36.46	16.78	.....	53.24
Tinning.....	17.84	5.54	.....	23.38
Plumbing.....	109.25	100.66	.....	209.91
Heating.....	4.13	.62	2.94	7.69
Steam fitting.....	233.27	171.96	.....	405.23
Miscellaneous.....	21.87	1.77	.....	23.64
Material drawn by janitor.....	.....	1.80	.....	1.80
<b>Total.....</b>	<b>872.52</b>	<b>917.09</b>	<b>2.94</b>	<b>1,792.55</b>
<b>Eaton School, No. 160:</b>				
Carpentering.....	2.00	.15	.....	2.15
Painting.....	7.04	5.33	.....	12.37
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	8.25	.....	.....	8.25
Heating.....	.....	.....	71.14	71.14
Gas engine.....	62.39	25.12	.....	87.51
Grading.....	556.92	105.33	.....	662.25
<b>Total.....</b>	<b>646.25</b>	<b>138.49</b>	<b>71.14</b>	<b>855.88</b>
<b>Eckington School, No. 116:</b>				
Carpentering.....	63.31	56.37	.....	119.68
Painting.....	106.86	16.96	.....	123.82
Tinning.....	10.03	2.56	.....	12.59
Plumbing.....	1.25	.59	.....	1.84
Heating.....	.75	.....	16.06	16.81
Gas engine.....	19.95	4.79	.....	24.74
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	3.18	.....	3.18
<b>Total.....</b>	<b>212.77</b>	<b>85.37</b>	<b>16.06</b>	<b>314.20</b>
<b>Edmonds School, No. 135:</b>				
Carpentering.....	13.72	3.25	.....	16.97
Painting.....	13.85	4.83	.....	18.68
Tinning.....	24.78	4.63	.....	29.41
Plumbing.....	16.50	1.67	.....	18.17
Gas engine.....	14.70	4.10	.....	18.80
<b>Total.....</b>	<b>83.55</b>	<b>18.48</b>	.....	<b>102.03</b>
<b>Emery School, No. 133:</b>				
Carpentering.....	25.37	.....	.....	25.37
Painting.....	322.92	70.39	.....	393.31
Tinning.....	97.72	54.97	.....	152.69
Plumbing.....	125.75	25.26	.....	151.01
Steam fitting.....	134.23	40.81	.....	175.04
Grading.....	13.51	.....	.....	13.51
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	3.04	.....	3.04
<b>Total.....</b>	<b>730.12</b>	<b>195.39</b>	.....	<b>925.51</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Fillmore School, No. 92:</b>				
Carpentering.....	\$423.08	\$156.22	.....	\$579.30
Painting.....	70.06	12.83	.....	82.89
Tinning.....	195.97	176.92	.....	372.89
Plumbing.....	6.25	1.06	.....	7.31
Heating.....	.....	.....	\$208.25	208.25
Grading.....	69.32	.....	.....	69.32
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>764.68</b>	<b>347.76</b>	<b>208.25</b>	<b>1,320.69</b>
<b>Force School, No. 32:</b>				
Carpentering.....	37.76	78.77	.....	116.53
Painting.....	21.44	5.37	.....	26.81
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	15.75	2.94	.....	18.69
Gas engine.....	9.07	.58	.....	9.65
Steam fitting.....	68.39	25.22	111.00	204.61
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.08	.....	1.08
<b>Total.....</b>	<b>172.68</b>	<b>117.44</b>	<b>111.00</b>	<b>401.12</b>
<b>Franklin School, No. 15:</b>				
Carpentering.....	155.60	14.16	.....	169.76
Painting.....	185.19	26.74	.....	211.93
Tinning.....	46.09	49.29	.....	95.38
Plumbing.....	25.50	2.09	.....	27.59
Steam fitting.....	47.52	20.64	193.24	261.40
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	5.68	.....	5.68
<b>Total.....</b>	<b>470.52</b>	<b>119.52</b>	<b>193.24</b>	<b>783.28</b>
<b>B. B. French School, No. 141:</b>				
Carpentering.....	122.32	42.17	.....	164.49
Painting.....	4.22	3.26	.....	7.48
Tinning.....	15.90	19.89	.....	35.79
Plumbing.....	11.00	.....	.....	11.00
Heating.....	16.44	1.26	16.66	34.36
Gas engine.....	15.32	8.68	.....	24.00
<b>Total.....</b>	<b>185.20</b>	<b>75.26</b>	<b>16.66</b>	<b>277.12</b>
<b>Gage School, No. 143:</b>				
Carpentering.....	11.10	1.30	.....	12.40
Painting.....	15.90	4.87	.....	20.77
Tinning.....	32.40	47.51	.....	79.91
Plumbing.....	11.50	1.51	.....	13.01
Heating.....	227.85	76.53	5.27	309.65
Gas engine.....	10.32	.58	.....	10.90
Material drawn by janitor.....	.....	29.74	.....	29.74
<b>Total.....</b>	<b>309.07</b>	<b>162.04</b>	<b>5.27</b>	<b>476.38</b>
<b>Gales School, No. 36:</b>				
Carpentering.....	59.25	85.40	.....	144.65
Painting.....	54.96	9.68	.....	64.64
Tinning.....	10.96	3.40	.....	14.36
Plumbing.....	159.50	78.80	.....	238.30
Heating.....	12.19	.46	.....	12.65
Steam fitting.....	87.80	36.64	.....	124.44
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	.54	.....	.54
<b>Total.....</b>	<b>395.28</b>	<b>215.84</b>	.....	<b>611.12</b>
<b>Garfield School, No. 158:</b>				
Painting.....	12.69	4.49	.....	17.18
Tinning.....	38.12	2.56	.....	40.68
Heating.....	23.25	36.01	.....	59.26
Gas engine.....	44.77	26.85	.....	71.62
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>118.83</b>	<b>70.64</b>	.....	<b>189.47</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Garnet School, No. 34:</b>				
Carpentering.....	\$10.00	\$1.33		\$11.33
Painting.....	6.67	4.40		11.07
Tinning.....	9.65	2.56		12.21
Plumbing.....	3.00	.31		3.31
Heating.....	3.44	3.51		6.95
Steam fitting.....	58.00	17.37		75.37
Miscellaneous.....	10.62	.92		11.54
Material drawn by janitor.....		.74		.74
<b>Total.....</b>	<b>101.38</b>	<b>31.14</b>		<b>132.52</b>
<b>Garrison School, No. 76:</b>				
Carpentering.....	17.56	9.65		27.21
Painting.....	14.87	6.00		20.87
Tinning.....	61.09	39.05		100.14
Plumbing.....	8.00	1.94		9.94
Heating.....			\$12.79	12.79
Material drawn by janitor.....		.38		.38
<b>Total.....</b>	<b>101.52</b>	<b>57.02</b>	<b>12.79</b>	<b>171.33</b>
<b>Giddings School, No. 63:</b>				
Carpentering.....	22.63	12.56		35.19
Painting.....	9.87	3.65		13.52
Tinning.....	60.65	80.00		140.65
Plumbing.....	1.25	.30		1.55
Heating.....	.88		25.57	26.45
Material drawn by janitor.....		2.41		2.41
<b>Total.....</b>	<b>95.28</b>	<b>98.92</b>	<b>25.57</b>	<b>219.77</b>
<b>Grant School, No. 41:</b>				
Carpentering.....	76.58	98.81		175.39
Painting.....	239.50	50.44		289.94
Tinning.....	276.73	718.07		994.80
Plumbing.....	3.00	.58		3.58
Steam fitting.....	71.17	48.58		119.75
Miscellaneous.....	10.62	.92		11.54
Material drawn by janitor.....		.73		.73
<b>Total.....</b>	<b>677.60</b>	<b>918.13</b>		<b>1,595.73</b>
<b>Grant Road School, No. 35:</b>				
Material drawn by janitor.....		20.34		20.34
<b>Greenleaf School, No. 105:</b>				
Carpentering.....	89.70	177.52		267.22
Painting.....	12.34	4.11		16.45
Tinning.....	9.65	2.56		12.21
Heating.....			255.75	255.75
Gas engine.....	22.77	4.75		27.52
Material drawn by janitor.....		3.23		3.23
<b>Total.....</b>	<b>134.46</b>	<b>192.17</b>	<b>255.75</b>	<b>582.38</b>
<b>Good Hope School, No. 73:</b>				
Painting.....	3.32	.71		4.03
<b>Hamilton School, No. 37:</b>				
Carpentering.....	77.06	57.35		134.41
Painting.....	6.98	2.01		8.99
Tinning.....	9.65	2.56		12.21
<b>Total.....</b>	<b>93.69</b>	<b>61.92</b>		<b>155.61</b>
<b>Harrison School, No. 84:</b>				
Carpentering.....	8.13	.69		8.82
Painting.....	13.60	3.01		16.61
Tinning.....	23.71	21.04		44.75
Plumbing.....	5.25	1.38		6.63
Heating.....			179.02	179.02
Material drawn by janitor.....		4.89		4.89
<b>Total.....</b>	<b>50.69</b>	<b>31.01</b>	<b>179.02</b>	<b>260.72</b>



*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Hayes School, No. 107:</b>				
Carpentering.....	\$65.75	\$59.86	.....	\$125.61
Painting.....	17.98	6.70	.....	24.68
Tinning.....	283.16	547.06	.....	830.22
Heating.....	.....	.....	\$6.27	6.27
Gas engine.....	10.95	.84	.....	11.79
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>377.84</b>	<b>615.19</b>	<b>6.27</b>	<b>999.30</b>
<b>Henry School, No. 33:</b>				
Carpentering.....	191.14	230.76	.....	421.90
Painting.....	35.75	12.36	.....	48.11
Tinning.....	76.10	35.42	.....	111.52
Plumbing.....	20.31	9.49	.....	29.80
Steam fitting.....	80.64	40.64	.....	121.28
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>414.56</b>	<b>330.32</b>	.....	<b>744.88</b>
<b>Hilton School, No. 115:</b>				
Carpentering.....	72.66	5.91	.....	78.57
Painting.....	14.27	7.40	.....	21.67
Tinning.....	37.96	16.22	.....	54.18
Plumbing.....	13.50	.88	.....	14.38
Gas engine.....	47.13	14.90	.....	62.03
Material drawn by janitor.....	.....	2.21	.....	2.21
<b>Total.....</b>	<b>185.52</b>	<b>47.52</b>	.....	<b>233.04</b>
<b>Hubbard School, No. 119:</b>				
Carpentering.....	28.25	4.05	.....	32.30
Painting.....	15.26	8.52	.....	23.78
Tinning.....	174.91	113.44	.....	288.35
Plumbing.....	149.13	178.37	.....	327.50
Heating.....	.....	.....	6.20	6.20
Gas engine.....	10.88	9.02	.....	19.90
Material drawn by janitor.....	.....	3.72	.....	3.72
<b>Total.....</b>	<b>378.43</b>	<b>317.12</b>	<b>6.20</b>	<b>701.75</b>
<b>Hyde School, No. 147:</b>				
Carpentering.....	25.44	10.70	.....	36.14
Painting.....	7.57	1.95	.....	9.52
Tinning.....	11.03	4.11	.....	15.14
Plumbing.....	24.00	2.86	.....	26.86
Heating.....	2.75	.09	109.25	112.09
Gas engine.....	16.83	3.54	.....	20.37
Material drawn by janitor.....	.....	.40	.....	.40
<b>Total.....</b>	<b>87.62</b>	<b>23.65</b>	<b>109.25</b>	<b>220.52</b>
<b>Jackson School, No. 69:</b>				
Carpentering.....	12.63	9.37	.....	22.00
Painting.....	21.28	16.09	.....	37.37
Tinning.....	93.79	59.80	.....	153.59
Plumbing.....	10.25	2.26	.....	12.51
Heating.....	.56	.....	145.47	146.03
Material drawn by janitor.....	.....	2.25	.....	2.25
<b>Total.....</b>	<b>138.51</b>	<b>89.77</b>	<b>145.47</b>	<b>373.75</b>
<b>Jefferson School, No. 23:</b>				
Carpentering.....	499.70	604.23	.....	1,103.93
Painting.....	127.97	30.18	.....	158.15
Tinning.....	106.28	105.62	.....	211.90
Plumbing.....	28.75	17.13	.....	45.88
Steam fitting.....	168.98	74.12	.....	243.10
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	8.69	.....	8.69
<b>Total.....</b>	<b>942.30</b>	<b>840.89</b>	.....	<b>1,783.19</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Johnson School, No. 95:</b>				
Carpentering.....	\$29.81	\$33.57		\$63.38
Painting.....	151.68	29.11		180.79
Tinning.....	11.71	3.96		15.67
Plumbing.....	3.75			3.75
Heating.....	1.38		\$49.21	50.59
Grading.....	27.44			27.44
Material drawn by janitor.....		.73		.73
<b>Total.....</b>	<b>225.77</b>	<b>67.37</b>	<b>49.21</b>	<b>342.35</b>
<b>Johnson Annex School, No. 21:</b>				
Plumbing.....	5.25			5.25
<b>Jones School, No. 77:</b>				
Carpentering.....	70.60	5.05		75.65
Painting.....	99.96	15.41		115.37
Tinning.....	11.40	3.31		14.71
Plumbing.....	5.25	1.70		6.95
Heating.....			325.46	325.46
Grading.....	21.97			21.97
Material drawn by janitor.....		3.22		3.22
<b>Total.....</b>	<b>209.18</b>	<b>28.69</b>	<b>325.46</b>	<b>563.33</b>
<b>Kenilworth School, No. 128:</b>				
Carpentering.....	55.32	20.02		75.34
Painting.....	16.96	3.17		20.13
Tinning.....	9.65	2.56		12.21
Plumbing.....	8.50			8.50
Heating.....	4.50	.37	132.50	137.37
Motor.....	2.19	.64		2.83
<b>Total.....</b>	<b>97.12</b>	<b>26.76</b>	<b>132.50</b>	<b>256.38</b>
<b>Ketcham School, No. 149:</b>				
Carpentering.....	4.75	5.39		10.14
Painting.....	10.43	4.66		15.09
Tinning.....	9.65	2.56		12.21
Plumbing.....	36.00	18.57		54.57
Heating.....			8.76	8.76
Gas engine.....	21.70	.98		22.68
Material drawn by janitor.....		1.31		1.31
<b>Total.....</b>	<b>82.53</b>	<b>33.47</b>	<b>8.76</b>	<b>124.76</b>
<b>Langdon School, No. 108:</b>				
Carpentering.....	112.03	37.77		149.80
Painting.....	32.45	8.41		40.86
Tinning.....	59.65	20.77		80.42
Motor.....	.63	.07		.70
Grading.....	19.50			19.50
Material drawn by janitor.....		2.81		2.81
<b>Total.....</b>	<b>224.26</b>	<b>69.83</b>		<b>294.09</b>
<b>Langston School, No. 132:</b>				
Carpentering.....	33.69	16.38		50.07
Painting.....	21.29	12.55		33.84
Tinning.....	9.65	2.56		12.21
Plumbing.....	138.57	38.76		177.33
Heating.....			7.59	7.59
Gas engine.....	17.52	16.97		34.49
Material drawn by janitor.....		2.22		2.22
<b>Total.....</b>	<b>220.72</b>	<b>89.44</b>	<b>7.59</b>	<b>317.75</b>
<b>Lenox School, No. 67:</b>				
Carpentering.....	51.01	89.09		140.10
Painting.....	18.66	8.80		27.46
Tinning.....	30.28	21.44		51.72
Plumbing.....	19.50	1.96		21.46
Heating.....	2.63		2.25	4.88
Material drawn by janitor.....		.91		.91
<b>Total.....</b>	<b>122.08</b>	<b>122.20</b>	<b>2.25</b>	<b>246.53</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Lincoln School, No. 18:</b>				
Carpentering.....	\$79.20	\$117.34	.....	\$196.54
Painting.....	13.20	4.69	.....	17.89
Tinning.....	38.53	17.35	.....	55.88
Plumbing.....	6.75	.16	.....	6.91
Heating.....	8.25	4.71	.....	12.96
Steam fitting.....	38.41	8.54	.....	46.95
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	.29	.....	.29
<b>Total.....</b>	<b>194.96</b>	<b>154.00</b>	<b>.....</b>	<b>348.96</b>
<b>Logan School, No. 90:</b>				
Carpentering.....	104.13	188.46	.....	292.59
Painting.....	9.59	2.50	.....	12.09
Tinning.....	91.21	53.19	.....	144.40
Plumbing.....	2.25	.....	.....	2.25
Heating.....	.19	.....	\$34.87	35.06
Material drawn by janitor.....	.....	4.51	.....	4.51
<b>Total.....</b>	<b>207.37</b>	<b>248.66</b>	<b>34.87</b>	<b>490.90</b>
<b>Lovejoy School, No. 124:</b>				
Carpentering.....	233.04	113.16	.....	346.20
Painting.....	87.21	18.96	.....	106.17
Tinning.....	34.46	23.45	.....	57.91
Plumbing.....	101.63	85.98	.....	187.61
Heating.....	2.75	.83	36.35	39.93
Gas engine.....	75.32	24.75	.....	100.07
Material drawn by janitor.....	.....	.81	.....	.81
<b>Total.....</b>	<b>534.41</b>	<b>267.94</b>	<b>36.35</b>	<b>838.70</b>
<b>Ludlow School, No. 142:</b>				
Carpentering.....	23.25	7.19	.....	30.44
Painting.....	14.39	4.84	.....	19.23
Tinning.....	19.47	4.39	.....	23.86
Plumbing.....	2.25	.47	.....	2.72
Heating.....	.....	.....	5.27	5.27
Gas engine.....	23.02	4.56	.....	27.58
Miscellaneous.....	6.19	.....	.....	6.19
Material drawn by janitor.....	.....	3.18	.....	3.18
<b>Total.....</b>	<b>88.57</b>	<b>24.63</b>	<b>5.27</b>	<b>118.47</b>
<b>M Street High School, No. 82:</b>				
Carpentering.....	522.10	149.77	.....	671.95
Painting.....	29.35	12.84	.....	42.19
Tinning.....	31.53	9.62	.....	41.15
Plumbing.....	26.81	10.45	.....	37.26
Steamfitting.....	18.50	9.71	.....	28.21
Miscellaneous.....	40.59	1.14	.....	41.83
Material drawn by janitor.....	.....	.73	.....	.73
<b>Total.....</b>	<b>669.06</b>	<b>194.26</b>	<b>.....</b>	<b>863.32</b>
<b>M Street heating plant:</b>				
Plumbing.....	25.50	6.60	.....	32.10
Steamfitting.....	50.13	18.85	280.00	348.98
Miscellaneous.....	.....	.....	30.00	30.00
Material furnished engineer.....	.....	60.69	.....	60.69
<b>Total.....</b>	<b>75.63</b>	<b>86.14</b>	<b>310.00</b>	<b>471.77</b>
<b>Madison School, No. 71:</b>				
Carpentering.....	33.38	16.64	.....	50.02
Painting.....	59.64	16.55	.....	76.19
Tinning.....	165.55	153.27	.....	318.82
Plumbing.....	22.50	5.65	.....	28.15
Heating.....	.....	.....	10.77	10.77
<b>Total.....</b>	<b>281.07</b>	<b>192.11</b>	<b>10.77</b>	<b>483.95</b>
<b>Magruder School, No. 62:</b>				
Carpentering.....	30.31	13.38	.....	43.69
Painting.....	14.41	6.11	.....	20.52
Tinning.....	91.72	61.94	.....	153.66
Plumbing.....	4.50	.24	.....	4.74
Heating.....	.....	.....	.62	.62
Material drawn by janitor.....	.....	1.28	.....	1.23
<b>Total.....</b>	<b>140.94</b>	<b>82.95</b>	<b>.62</b>	<b>224.51</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Maury School, No. 55:</b>				
Carpentering.....	\$157.91	\$108.84	.....	\$266.75
Painting.....	86.57	11.32	.....	97.89
Tinning.....	26.47	135.01	.....	161.48
Plumbing.....	39.25	.79	.....	40.04
Heating.....	2.38	.60	\$4.18	7.16
Gas engine.....	14.40	3.98	.....	18.38
Material drawn by janitor.....	.....	1.89	.....	1.89
<b>Total.....</b>	<b>326.98</b>	<b>262.43</b>	<b>4.18</b>	<b>593.59</b>
<b>McCormick School, No. 16:</b>				
Painting.....	3.38	1.38	.....	4.76
Tinning.....	11.71	4.61	.....	16.32
Plumbing.....	3.38	.30	.....	3.68
Heating.....	.....	.....	20.69	20.69
<b>Total.....</b>	<b>18.47</b>	<b>6.29</b>	<b>20.69</b>	<b>45.45</b>
<b>McKinley School, No. 130:</b>				
Carpentering.....	290.16	108.84	.....	399.00
Painting.....	55.99	15.21	.....	71.20
Tinning.....	69.16	21.94	.....	91.10
Plumbing.....	38.94	14.48	.....	53.42
Heating.....	.....	.....	250.00	250.00
Steamfitting.....	76.28	17.08	.....	93.36
Miscellaneous.....	10.62	.92	.....	11.54
<b>Total.....</b>	<b>541.15</b>	<b>178.47</b>	<b>250.00</b>	<b>969.62</b>
<b>Military Road School, No. 8:</b>				
Carpentering.....	115.57	21.70	.....	137.27
Painting.....	8.91	4.71	.....	13.62
Plumbing.....	.....	165.00	.....	165.00
Material drawn by janitor.....	.....	5.48	.....	5.48
<b>Total.....</b>	<b>124.48</b>	<b>196.89</b>	.....	<b>321.37</b>
<b>Monroe School, No. 72:</b>				
Carpentering.....	83.20	17.80	.....	101.00
Painting.....	103.97	24.25	.....	128.22
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	12.25	1.52	.....	13.77
Heating.....	11.00	3.27	352.31	366.58
Motor.....	3.13	.21	.....	3.34
Material drawn by janitor.....	.....	3.21	.....	3.21
<b>Total.....</b>	<b>223.20</b>	<b>52.82</b>	<b>352.31</b>	<b>628.33</b>
<b>Montgomery School, No. 140:</b>				
Carpentering.....	99.79	.....	.....	99.79
Painting.....	9.54	4.97	.....	14.51
Plumbing.....	3.00	2.20	.....	5.20
Heating.....	.....	.....	38.52	38.52
Gas engine.....	16.58	16.45	.....	33.03
Miscellaneous.....	.....	.73	.....	.73
<b>Total.....</b>	<b>128.91</b>	<b>24.35</b>	<b>38.52</b>	<b>191.78</b>
<b>Morgan School, No. 125:</b>				
Carpentering.....	12.88	6.10	.....	18.98
Painting.....	12.36	4.58	.....	16.94
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	7.00	2.31	.....	9.31
Heating.....	2.88	.17	9.69	12.74
Gas engine.....	17.63	30.82	.....	48.45
Grading.....	12.69	.....	.....	12.69
Material drawn by janitor.....	.....	2.08	.....	2.08
<b>Total.....</b>	<b>75.09</b>	<b>48.62</b>	<b>9.69</b>	<b>133.40</b>
<b>Morse School, No. 44:</b>				
Carpentering.....	157.88	65.13	.....	223.01
Painting.....	318.34	60.04	.....	378.38
Tinning.....	103.72	61.72	.....	165.44
Plumbing.....	1.56	.33	.....	1.89
Heating.....	.88	.....	18.68	19.56
Gas engine.....	10.33	1.06	.....	11.39
Material drawn by janitor.....	.....	1.38	.....	1.38
<b>Total.....</b>	<b>592.71</b>	<b>189.66</b>	<b>18.68</b>	<b>801.05</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>New Mott School, No. 153:</b>				
Carpentering.....	\$22.67	\$4.33	.....	\$27.00
Painting.....	160.36	34.07	.....	194.43
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	11.75	.....	.....	11.75
Heating.....	2.81	45.37	.....	48.38
Gas engine.....	17.51	5.33	.....	22.84
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.90	.....	1.90
Total.....	235.37	94.68	.....	330.05
<b>Old Mott School, No. 40:</b>				
Painting.....	5.13	1.71	.....	6.84
Plumbing.....	1.00	.....	.....	1.00
Total.....	6.13	1.71	.....	7.84
<b>Orr School, No. 122:</b>				
Painting.....	15.03	3.17	.....	18.20
Tinning.....	26.15	13.81	.....	39.96
Heating.....	.....	.....	\$15.03	15.03
Material drawn by janitor.....	.....	1.56	.....	1.56
Total.....	41.18	18.54	15.03	74.75
<b>Parkview Portable:</b>				
Carpentering.....	8.00	1.54	.....	9.54
Painting.....	7.75	1.85	.....	9.60
Plumbing.....	1.81	.43	.....	2.24
Total.....	17.56	3.82	.....	21.38
<b>Patterson School, No. 93:</b>				
Carpentering.....	18.88	1.34	.....	20.22
Painting.....	17.92	5.15	.....	23.07
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	1.00	.34	.....	1.34
Heating.....	.....	.....	1.55	1.55
Total.....	47.45	9.39	1.55	58.39
<b>Payne School, No. 98:</b>				
Carpentering.....	160.06	298.07	.....	458.13
Painting.....	14.03	5.00	.....	19.03
Tinning.....	10.53	4.09	.....	14.62
Plumbing.....	1.50	.52	.....	2.02
Heating.....	.....	.....	32.94	32.94
Gas engine.....	9.70	.58	.....	10.28
Material drawn by janitor.....	.....	1.56	.....	1.56
Total.....	195.82	309.82	32.94	538.58
<b>Peabody School, No. 31:</b>				
Carpentering.....	192.42	23.68	.....	216.10
Painting.....	22.94	13.65	.....	36.59
Tinning.....	100.65	88.10	.....	188.75
Plumbing.....	54.00	30.75	.....	84.75
Steamfitting.....	39.90	18.48	.....	58.38
Miscellaneous.....	17.81	1.73	.....	19.54
Material drawn by janitor.....	.....	1.62	.....	1.62
Total.....	427.72	178.01	.....	605.73
<b>Petworth School, No. 131:</b>				
Carpentering.....	13.00	5.34	.....	18.34
Painting.....	13.13	5.41	.....	18.54
Tinning.....	16.65	7.79	.....	24.44
Plumbing.....	88.25	22.46	.....	110.71
Heating.....	9.31	2.72	.....	12.03
Gas engine.....	13.12	.58	.....	13.70
Material drawn by janitor.....	.....	1.00	.....	1.00
Total.....	153.46	45.30	.....	198.76

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Phelps School, No. 57:</b>				
Carpentering.....	\$24.56	\$11.11	.....	\$35.67
Painting.....	14.00	5.09	.....	19.09
Tinning.....	106.46	59.42	.....	165.88
Plumbing.....	11.25	.86	.....	12.11
Heating.....	.....	.....	\$65.29	65.29
Material drawn by janitor.....	.....	2.06	.....	2.06
<b>Total.....</b>	<b>156.27</b>	<b>78.54</b>	<b>65.29</b>	<b>300.10</b>
<b>Phillips School, No. 81:</b>				
Carpentering.....	73.00	112.42	.....	185.42
Painting.....	13.44	4.72	.....	18.16
Tinning.....	65.15	39.19	.....	104.34
Plumbing.....	6.75	.33	.....	7.08
Heating.....	.....	.....	11.93	11.93
<b>Total.....</b>	<b>158.34</b>	<b>156.66</b>	<b>11.93</b>	<b>326.93</b>
<b>Pierce School, No. 94:</b>				
Carpentering.....	4.00	1.53	.....	5.53
Painting.....	136.36	32.84	.....	169.20
Tinning.....	17.22	14.22	.....	31.44
Plumbing.....	12.50	4.27	.....	16.77
Heating.....	.....	.....	8.52	8.52
Material drawn by janitor.....	.....	.38	.....	.38
<b>Total.....</b>	<b>170.08</b>	<b>53.24</b>	<b>8.52</b>	<b>231.84</b>
<b>Polk School, No. 86:</b>				
Carpentering.....	92.41	107.72	.....	200.13
Painting.....	29.20	7.48	.....	36.68
Tinning.....	18.21	12.97	.....	31.18
Plumbing.....	7.25	1.07	.....	8.32
Heating.....	.....	.....	86.95	86.95
Material drawn by janitor.....	.....	1.26	.....	1.26
<b>Total.....</b>	<b>147.07</b>	<b>130.50</b>	<b>86.95</b>	<b>364.52</b>
<b>New Potomac School, No. 159:</b>				
Carpentering.....	30.57	6.12	.....	36.69
Painting.....	13.23	4.24	.....	17.47
Tinning.....	14.78	8.82	.....	23.60
Plumbing.....	6.50	.82	.....	7.32
Heating.....	.....	.....	1.94	1.94
Gas engine.....	20.08	25.73	.....	45.81
Grading.....	11.72	.....	.....	11.72
<b>Total.....</b>	<b>96.88</b>	<b>45.73</b>	<b>1.94</b>	<b>144.55</b>
<b>Powell School, No. 157:</b>				
Carpentering.....	10.00	.42	.....	10.42
Painting.....	10.17	6.64	.....	16.81
Tinning.....	44.02	17.66	.....	61.68
Plumbing.....	1.50	.....	.....	1.50
Heating.....	7.25	.60	8.99	16.84
Motor.....	7.81	.....	.....	7.81
Miscellaneous.....	48.00	2.25	.....	50.25
<b>Total.....</b>	<b>128.75</b>	<b>27.57</b>	<b>8.99</b>	<b>165.31</b>
<b>Randall School, No. 28:</b>				
Carpentering.....	67.22	92.03	.....	159.25
Painting.....	20.00	5.24	.....	25.24
Tinning.....	77.54	27.97	.....	105.51
Plumbing.....	121.63	26.80	.....	148.43
Heating.....	.....	.....	30.46	30.46
Material drawn by janitor.....	.....	4.08	.....	4.08
<b>Total.....</b>	<b>286.39</b>	<b>156.12</b>	<b>30.46</b>	<b>472.97</b>
<b>Randle Highlands School, No. 166:</b>				
Painting.....	4.22	.....	.....	4.22
Heating.....	.....	.....	.23	.23
Motor.....	5.00	.07	.....	5.07
Grading.....	240.24	.....	.....	240.24
Material drawn by janitor.....	.....	2.81	.....	2.81
<b>Total.....</b>	<b>249.46</b>	<b>2.88</b>	<b>.23</b>	<b>252.57</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Reno School, No. 139:</b>				
Carpentering.....	\$13.94	\$2.22	.....	\$16.16
Painting.....	77.17	27.78	.....	104.95
Tinning.....	39.78	26.21	.....	65.99
Heating.....			\$28.44	28.44
<b>Total.....</b>	<b>130.89</b>	<b>56.21</b>	<b>28.44</b>	<b>215.54</b>
<b>Reservoir School, No. 110:</b>				
Carpentering.....	250.54	236.25	.....	486.79
Painting.....	59.16	32.47	.....	91.63
Tinning.....	24.66	17.71	.....	42.37
Heating.....	20.12	15.33	33.50	68.95
Miscellaneous.....		.19		.19
<b>Total.....</b>	<b>354.48</b>	<b>301.95</b>	<b>33.50</b>	<b>689.93</b>
<b>Ross School, No. 146:</b>				
Carpentering.....	67.63	19.60	.....	87.23
Painting.....	14.85	7.62	.....	22.47
Tinning.....	139.11	42.61	.....	181.72
Plumbing.....	6.00	.63	.....	6.63
Miscellaneous.....	.31		11.31	11.62
Grading.....	128.99	24.59		153.58
<b>Total.....</b>	<b>356.89</b>	<b>95.05</b>	<b>11.31</b>	<b>463.25</b>
<b>Seaton School, No. 22:</b>				
Carpentering.....	160.48	165.58	.....	326.06
Painting.....	221.56	28.78	.....	250.34
Tinning.....	26.65	10.30	.....	36.95
Plumbing.....	42.25	110.03	.....	152.28
Steamfitting.....	118.03	20.37	.....	138.40
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....		2.45	.....	2.45
<b>Total.....</b>	<b>579.59</b>	<b>338.43</b>	.....	<b>918.02</b>
<b>Simmons School, No. 134:</b>				
Carpentering.....	31.38	.25	.....	31.63
Painting.....	14.31	5.13	.....	19.44
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	5.25		.....	5.25
Steamfitting.....		15.23	.....	15.23
Miscellaneous.....	10.62	.92	.....	11.54
<b>Total.....</b>	<b>71.21</b>	<b>24.09</b>	.....	<b>95.30</b>
<b>Slater School, No. 80:</b>				
Carpentering.....	4.00	6.39	.....	10.39
Painting.....	18.65	7.60	.....	26.25
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	14.56	1.78	.....	16.34
Heating.....	.69		33.17	33.86
Material drawn by janitor.....		1.56	.....	1.56
<b>Total.....</b>	<b>47.55</b>	<b>19.89</b>	<b>33.17</b>	<b>100.61</b>
<b>H. Smothers School, No. 56:</b>				
Carpentering.....	37.25	16.38	.....	53.63
Painting.....	6.13	1.81	.....	7.94
Tinning.....	26.40	30.20	.....	56.60
Material drawn by janitor.....		.73	.....	.73
<b>Total.....</b>	<b>69.78</b>	<b>49.12</b>	.....	<b>118.90</b>
<b>Fort Slocum School, No. 11:</b>				
Carpentering.....	40.88	11.21	.....	52.09
Painting.....	24.64	7.49	.....	32.13
Tinning.....	9.65	2.56	.....	12.21
<b>Total.....</b>	<b>75.17</b>	<b>21.26</b>	.....	<b>96.43</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Smallwood School, No. 64:</b>				
Carpentering.....	\$120.69	\$122.17	.....	\$242.86
Painting.....	47.24	14.74	.....	61.98
Tinning.....	136.79	133.25	.....	270.04
Plumbing.....	6.75	.46	.....	7.21
Heating.....	.....	.....	\$18.06	18.06
Material drawn by janitor.....	.....	5.07	.....	5.07
Total.....	311.47	275.69	18.06	605.22
<b>Stanton School, No. 138:</b>				
Carpentering.....	48.75	33.55	.....	82.30
Painting.....	8.47	3.09	.....	11.56
Tinning.....	15.40	16.11	.....	31.51
Material drawn by janitor.....	.....	1.43	.....	1.43
Total.....	72.62	54.18	.....	126.80
<b>Stevens School, No. 97:</b>				
Carpentering.....	30.00	1.42	.....	31.42
Painting.....	18.41	6.41	.....	24.82
Tinning.....	13.59	7.79	.....	21.38
Plumbing.....	152.75	22.73	.....	175.48
Steamfitting.....	69.48	22.49	111.00	202.97
Miscellaneous.....	10.62	.92	29.30	40.84
Total.....	294.85	61.76	140.30	496.91
<b>Sumner School, No. 19:</b>				
Carpentering.....	4.00	.76	.....	4.76
Painting.....	12.98	8.33	.....	21.31
Tinning.....	21.34	13.41	.....	34.75
Plumbing.....	12.75	3.69	.....	16.44
Steamfitting.....	18.63	4.29	.....	22.92
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.13	.....	1.13
Total.....	80.32	32.53	.....	112.85
<b>Syphax School, No. 126:</b>				
Carpentering.....	125.98	37.25	.....	163.23
Painting.....	14.23	5.82	.....	20.05
Tinning.....	9.65	2.56	.....	12.21
Plumbing.....	21.75	9.48	.....	31.23
Heating.....	96.07	33.64	.....	129.71
Steamfitting.....	169.26	50.34	.....	219.60
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	2.71	.....	2.71
Total.....	447.56	142.72	.....	590.28
<b>Takoma School, No. 118:</b>				
Carpentering.....	15.00	.65	.....	15.65
Painting.....	143.12	23.04	.....	166.16
Tinning.....	113.47	47.72	.....	161.19
Plumbing.....	129.44	50.51	.....	179.95
Gas engine.....	36.14	12.72	.....	48.86
Total.....	437.17	134.64	.....	571.81
<b>Taylor School, No. 83:</b>				
Carpentering.....	11.50	.93	.....	12.43
Painting.....	97.50	17.78	.....	115.28
Tinning.....	106.84	76.20	.....	183.04
Heating.....	5.94	1.12	19.68	26.74
Material drawn by janitor.....	.....	2.00	.....	2.00
Total.....	221.78	98.03	19.68	339.49
<b>Tenley School, No. 102:</b>				
Carpentering.....	195.67	56.67	.....	252.34
Painting.....	140.64	32.07	.....	172.71
Tinning.....	37.41	19.67	.....	57.08
Plumbing.....	12.00	1.30	.....	13.30
Steamfitting.....	62.12	49.36	108.00	219.48
Miscellaneous.....	10.62	.92	.....	11.54
Material drawn by janitor.....	.....	1.46	.....	1.46
Total.....	458.46	161.45	108.00	727.91



*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Tenley School Annex:</b>				
Carpentering.....	\$170.51	\$56.99	.....	\$227.50
Painting.....	10.78	12.34	.....	23.12
Tinning.....	37.40	60.07	.....	97.47
Total.....	218.69	129.40	.....	348.09
<b>Thomson School, No. 156:</b>				
Carpentering.....	62.31	19.25	.....	81.56
Painting.....	61.40	26.74	.....	88.14
Tinning.....	30.53	8.45	.....	38.98
Plumbing.....	15.50	1.00	.....	16.50
Heating.....	.....	.....	\$137.56	137.56
Motor.....	.63	.....	.....	.63
Material drawn by janitor.....	.....	.70	.....	.70
Total.....	170.37	56.14	137.56	364.07
<b>Threlkeld School, No. 14:</b>				
Carpentering.....	86.57	117.73	.....	204.30
Painting.....	183.71	48.47	.....	232.18
Tinning.....	12.21	4.80	.....	17.01
Plumbing.....	20.50	8.91	.....	29.41
Heating.....	.....	.....	195.00	195.00
Total.....	302.99	179.91	195.00	677.90
<b>Toner School, No. 114:</b>				
Painting.....	14.71	9.38	.....	24.09
Tinning.....	20.46	4.68	.....	25.14
Gas engine.....	49.60	17.01	.....	66.61
Miscellaneous.....	2.50	1.33	.....	3.83
Material drawn by janitor.....	.....	.30	.....	.30
Total.....	87.27	32.70	.....	119.97
<b>Towers School, No. 59:</b>				
Carpentering.....	73.64	106.69	.....	180.33
Painting.....	77.44	39.37	.....	116.81
Tinning.....	67.21	76.89	.....	144.10
Plumbing.....	7.50	5.75	.....	13.25
Heating.....	.....	.....	18.13	18.13
Miscellaneous.....	3.13	.31	.....	3.44
Total.....	228.92	229.01	18.13	476.06
<b>Twining School, No. 45:</b>				
Carpentering.....	37.01	4.36	.....	41.37
Painting.....	11.54	3.12	.....	14.66
Tinning.....	32.13	24.02	.....	56.15
Plumbing.....	8.50	3.15	.....	11.65
Heating.....	2.06	.86	71.45	74.37
Gas engine.....	32.71	2.98	.....	35.69
Material drawn by janitor.....	.....	.73	.....	.73
Total.....	123.95	39.22	71.45	234.62
<b>Tyler School, No. 83:</b>				
Carpentering.....	59.84	11.91	.....	71.75
Painting.....	11.12	3.60	.....	14.72
Tinning.....	147.16	163.79	.....	310.95
Plumbing.....	14.75	2.50	.....	17.25
Heating.....	.....	.....	43.63	43.63
Material drawn by janitor.....	.....	.36	.....	.36
Total.....	232.87	182.16	43.63	458.66
<b>Van Buren School, No. 87:</b>				
Carpentering.....	61.97	16.24	.....	78.21
Painting.....	12.39	6.68	.....	19.07
Tinning.....	73.04	62.39	.....	135.43
Plumbing.....	3.00	.42	.....	3.42
Heating.....	.....	.....	15.89	15.89
Material drawn by janitor.....	.....	.73	.....	.73
Total.....	150.40	86.46	15.89	252.75
<b>Van Buren Annex, No. 38:</b>				
Painting.....	.38	.15	.....	.53

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>Van Ness School, No. 150:</b>				
Carpentering.....	\$34.13	\$14.13		\$48.26
Painting.....	70.87	14.48		85.35
Plumbing.....	7.50	.32		7.82
Heating.....	16.50	32.91		49.41
Gas engine.....	19.33	18.16		37.49
<b>Total.....</b>	<b>148.33</b>	<b>80.00</b>		<b>228.33</b>
<b>Wallach School, No. 4:</b>				
Carpentering.....	285.51	195.75		481.26
Painting.....	419.65	104.28		523.93
Tinning.....	391.66	546.91		938.57
Plumbing.....	36.94	18.40		55.34
Steam fitting.....	74.26	13.60		87.86
Miscellaneous.....	10.62	.92	\$9.67	21.21
Material drawn by janitor.....		2.56		2.56
<b>Total.....</b>	<b>1,218.64</b>	<b>882.42</b>	<b>9.67</b>	<b>2,110.73</b>
<b>Webb School, No. 121:</b>				
Painting.....	15.63	8.67		24.30
Tinning.....	44.09	36.49		80.58
Plumbing.....	17.25	1.92		19.17
Heating.....			4.42	4.42
Gas engine.....	40.95	7.35		48.30
Material drawn by janitor.....		.89		.89
<b>Total.....</b>	<b>117.92</b>	<b>55.32</b>	<b>4.42</b>	<b>177.66</b>
<b>Webster School, No. 51:</b>				
Carpentering.....	23.88	6.84		30.72
Painting.....	10.26	5.07		15.33
Tinning.....	21.40	16.78		38.18
Plumbing.....	14.75	1.48		16.23
Steam fitting.....	82.48	44.81		127.29
Miscellaneous.....	10.62	.92		11.54
Material drawn by janitor.....		.40		.40
<b>Total.....</b>	<b>163.39</b>	<b>76.30</b>		<b>239.69</b>
<b>Weightman School, No. 54:</b>				
Carpentering.....	7.00	.76		7.76
Painting.....	12.54	5.57		18.11
Tinning.....	18.84	6.55		25.39
Plumbing.....	11.50	4.07		15.57
Heating.....			10.46	10.46
Material drawn by janitor.....		1.40		1.40
<b>Total.....</b>	<b>49.88</b>	<b>18.35</b>	<b>10.46</b>	<b>78.69</b>
<b>Western High School, No. 117:</b>				
Carpentering.....	448.09	143.13		591.22
Painting.....	831.48	311.91		1,143.39
Tinning.....	69.73	12.89		82.62
Plumbing.....	89.75	53.79	3,250.05	3,393.59
Heating.....	232.19	136.46		368.65
Steam fitting.....	384.06	393.02	24.00	801.08
Miscellaneous.....	35.44	.92		36.36
Material drawn by janitor.....		10.62		10.62
<b>Total.....</b>	<b>2,090.74</b>	<b>1,062.74</b>	<b>3,274.05</b>	<b>6,427.53</b>
<b>West School, No. 163:</b>				
Painting.....	4.70	3.97		8.67
Tinning.....	23.40	6.32		29.72
Plumbing.....	12.50	4.60		17.10
<b>Total.....</b>	<b>40.60</b>	<b>14.89</b>		<b>55.49</b>
<b>Wheatley School, No. 136:</b>				
Carpentering.....	136.63	35.49		172.12
Painting.....	17.90	7.60		25.50
Tinning.....	54.40	41.83		96.23
Plumbing.....	13.56	.77		14.33
Gas engine.....	9.32	.58		9.90
Grading.....	302.39	39.58		341.97
Material drawn by janitor.....		7.20		7.20
<b>Total.....</b>	<b>534.20</b>	<b>133.05</b>		<b>667.25</b>

*For repairs and improvements to school buildings and grounds, and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
Wilson School, No. 89:				
Carpentering.....	\$7.56	\$1.14	-----	\$8.70
Painting.....	115.14	30.59	-----	145.73
Tinning.....	10.15	2.89	-----	13.09
Plumbing.....	.75	-----	-----	.75
Heating.....	-----	-----	\$140.04	140.04
Material drawn by janitor.....	-----	.35	-----	.35
Total.....	133.60	34.97	140.04	308.61
Wilson Normal School, No. 162:				
Plumbing.....	2.25	-----	-----	2.25
Wisconsin Avenue Manual Training School, No. 164:				
Painting.....	2.34	1.23	-----	3.57
Woodburn School, No. 101:				
Painting.....	14.30	56.63	-----	70.93
Tinning.....	9.65	2.56	-----	12.21
Heating.....	8.75	7.40	-----	16.15
Miscellaneous.....	10.62	.92	-----	11.54
Material drawn by janitor.....	-----	2.44	-----	2.44
Total.....	43.32	69.95	-----	113.27
Wormley School, No. 49:				
Carpentering.....	76.19	30.23	-----	106.42
Painting.....	10.41	1.94	-----	12.35
Tinning.....	74.59	26.47	-----	101.06
Plumbing.....	30.75	2.34	-----	33.09
Heating.....	-----	-----	26.35	26.35
Gas engine.....	25.14	13.27	-----	38.41
Material drawn by janitor.....	-----	.73	-----	.73
Total.....	217.08	74.98	26.35	318.41

SUMMARY.

Total accounted for on written orders.....	\$70,734.73
Miscellaneous time consumed in shop and various schools.....	2,119.55
Material drawn from shop for various uses at shop and schools.....	745.20
Purchase of forage.....	777.53
Pro rata share of purchase of harness.....	80.40
Pro rata share of purchase of collar pads.....	1.00
Pro rata share of purchase of cornice brake.....	148.74
Horseshoeing.....	222.32
Gas consumed in machine shop.....	29.31
Purchase of coal.....	136.69
Allotment made to inspector of plumbing.....	500.00
Allotment made to sand wharf.....	33.67
Allotment made to engineer stables.....	334.60
Allotment made to purchasing office.....	200.00
Extending heating system from Wilson Normal School to Ross School.....	2,200.00
Constructing tunnel from Wilson Normal School to Ross School.....	3,000.00
Material on hand.....	3,329.42
Unexpended.....	406.84
Total.....	85,000.00

*Repairs and improvements to engine houses and grounds, 1913.*

[Appropriation \$12,000.]

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 engine house:				
Carpentering.....	\$222.73	\$106.88	-----	\$329.61
Painting.....	129.12	40.09	-----	169.21
Tinning.....	31.93	15.09	-----	47.02
Plumbing.....	41.26	99.83	-----	141.09
Material drawn by captain.....	-----	3.57	-----	3.57
Total.....	425.04	265.46	-----	690.50

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 2 engine house:</b>				
Carpentering.....	\$43.94	\$27.71	.....	\$71.65
Painting.....	82.34	22.01	.....	104.35
Tinning.....	1.88	.34	.....	2.22
Plumbing.....	23.25	35.88	.....	59.13
Miscellaneous.....	2.25	.50	.....	2.75
Steam fitting.....	11.88	3.83	.....	15.71
<b>Total.....</b>	<b>165.54</b>	<b>90.27</b>	<b>.....</b>	<b>255.81</b>
<b>No. 4 engine house:</b>				
Carpentering.....	111.81	78.11	.....	189.92
Painting.....	13.83	6.57	.....	20.40
Tinning.....	4.81	1.70	.....	6.51
Plumbing.....	28.00	160.06	.....	188.06
Heating.....	.....	1.75	.....	1.75
<b>Total.....</b>	<b>158.45</b>	<b>248.19</b>	<b>.....</b>	<b>406.64</b>
<b>No. 5 engine house:</b>				
Carpentering.....	140.41	82.67	.....	223.08
Painting.....	2.00	1.63	.....	3.63
Tinning.....	32.38	27.76	.....	60.14
Plumbing.....	.50	.71	.....	1.21
<b>Total.....</b>	<b>175.29</b>	<b>112.77</b>	<b>.....</b>	<b>288.06</b>
<b>No. 6 engine house:</b>				
Carpentering.....	35.88	22.99	.....	58.87
Painting.....	8.82	4.73	.....	13.55
Tinning.....	4.37	1.59	.....	5.96
Plumbing.....	13.00	135.91	.....	148.91
Miscellaneous.....	7.38	.47	.....	7.85
Material drawn by captain.....	.....	.58	.....	.58
<b>Total.....</b>	<b>69.45</b>	<b>166.27</b>	<b>.....</b>	<b>235.72</b>
<b>No. 7 engine house:</b>				
Carpentering.....	120.63	46.57	.....	167.20
Painting.....	15.97	17.74	.....	33.71
Tinning.....	.69	1.36	.....	2.05
Plumbing.....	9.00	7.32	.....	16.32
Miscellaneous.....	13.13	1.94	.....	15.07
Material drawn by captain.....	.....	.11	.....	.11
<b>Total.....</b>	<b>159.42</b>	<b>75.04</b>	<b>.....</b>	<b>234.46</b>
<b>No. 8 engine house:</b>				
Carpentering.....	84.39	83.48	.....	177.87
Painting.....	104.87	35.35	.....	140.22
Tinning.....	16.70	7.78	.....	24.48
Plumbing.....	23.50	8.33	.....	31.83
<b>Total.....</b>	<b>239.46</b>	<b>134.94</b>	<b>.....</b>	<b>374.40</b>
<b>No. 9 engine house:</b>				
Carpentering.....	106.28	88.37	.....	194.65
Painting.....	29.88	13.65	.....	43.53
Plumbing.....	18.50	42.66	.....	61.16
Heating.....	9.38	1.86	.....	11.24
Steam fitting.....	2.44	2.47	.....	4.91
Miscellaneous, constructing iron stalls and rewire trips.....	186.76	234.02	.....	420.78
Machine work.....	.....	.....	\$16.33	16.33
Material drawn by captain.....	.....	6.01	.....	6.01
<b>Total.....</b>	<b>353.24</b>	<b>389.04</b>	<b>16.33</b>	<b>758.61</b>
<b>No. 10 engine house:</b>				
Carpentering.....	297.68	342.08	.....	639.76
Painting.....	73.64	28.78	.....	102.42
Tinning.....	15.81	13.36	.....	29.17
Plumbing.....	6.25	2.73	.....	8.98
Heating.....	.....	3.00	.....	3.00
Miscellaneous.....	21.13	13.79	.....	34.92
Material drawn by captain.....	.....	8.74	.....	8.74
<b>Total.....</b>	<b>414.51</b>	<b>412.48</b>	<b>.....</b>	<b>826.99</b>
<b>No. 11 engine house:</b>				
Carpentering.....	39.82	30.26	.....	70.08
Painting.....	.47	.....	.....	.47
Tinning.....	14.44	9.41	.....	23.85

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 11 engine house—Continued.</b>				
Plumbing.....	\$3.00	\$0.90		\$3.90
Material drawn by captain.....		5.48		5.48
Total.....	57.73	46.05		103.78
<b>No. 12 engine house:</b>				
Carpentering.....	29.38	39.45		68.83
Painting.....	1.25	.78		2.03
Plumbing.....	21.50	57.15		78.65
Material drawn by captain.....		.33		.33
Total.....	52.13	97.71		149.84
<b>No. 13 engine house:</b>				
Carpentering.....	27.37	42.92		70.29
Painting.....	143.31	36.18		179.49
Plumbing.....	7.50	.64		8.14
Miscellaneous.....	4.69	.86		5.55
Repairing trip.....	2.19			2.19
Total.....	185.06	80.60		265.66
<b>No. 14 engine house:</b>				
Carpentering.....	82.91	61.26		144.17
Painting.....	1.32	.34		1.66
Tinning.....	9.50	5.42		14.92
Plumbing.....	9.01	.62		9.63
Heating.....	8.50	4.34	\$163.40	176.24
Total.....	111.24	71.98	163.40	346.62
<b>No. 15 engine house:</b>				
Carpentering.....	52.22	56.43		108.65
Painting.....	5.50	4.02		9.52
Plumbing.....	11.00	1.53		12.53
Heating.....	.75	2.25		3.00
Miscellaneous.....	2.19			2.19
Total.....	71.66	64.23		135.89
<b>No. 16 engine house:</b>				
Carpentering.....	63.14	52.00		115.14
Painting.....	1.50	.74		2.24
Plumbing.....	6.75	3.56		10.31
Miscellaneous.....	6.00	9.35		15.35
Material drawn by captain.....		.04		.04
Total.....	77.39	65.69		143.08
<b>No. 17 engine house:</b>				
Carpentering.....	121.25	89.29		210.54
Tinning.....	18.75	7.34		26.09
Plumbing.....	5.00	10.12		15.12
Total.....	145.00	106.75		251.75
<b>No. 18 engine house:</b>				
Carpentering.....	148.32	97.15		245.47
Tinning.....	46.50	34.68		81.18
Painting.....	21.57	7.05		28.62
Plumbing.....	20.50	35.45		55.95
Miscellaneous.....	10.19	14.50		24.69
Total.....	247.08	188.83		435.91
<b>No. 19 engine house:</b>				
Carpentering.....	193.25	388.51		581.76
Painting.....	1.22	.55		1.77
Plumbing.....	10.50	.77		11.27
Driving 15 new piles.....			\$362.00	362.00
Total.....	204.97	389.83	362.00	956.80
<b>No. 20 engine house:</b>				
Carpentering.....	10.00	7.95		17.95
Painting.....	6.59	1.05		7.64
Tinning.....	278.82	409.25		688.07
Plumbing.....	45.32	4.84		50.16
Heating.....			70.00	70.00
Total.....	340.73	423.09	70.00	833.82

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 2 engine house:</b>				
Carpentering.....	\$43.94	\$27.71	.....	\$71.65
Painting.....	82.34	22.01	.....	104.35
Tinning.....	1.88	.34	.....	2.22
Plumbing.....	23.25	35.88	.....	59.13
Miscellaneous.....	2.25	.50	.....	2.75
Steam fitting.....	11.88	3.83	.....	15.71
<b>Total.....</b>	<b>165.54</b>	<b>90.27</b>	<b>.....</b>	<b>255.81</b>
<b>No. 4 engine house:</b>				
Carpentering.....	111.81	78.11	.....	189.92
Painting.....	13.83	6.57	.....	20.40
Tinning.....	4.81	1.70	.....	6.51
Plumbing.....	28.00	160.06	.....	188.06
Heating.....	.....	1.75	.....	1.75
<b>Total.....</b>	<b>158.45</b>	<b>248.19</b>	<b>.....</b>	<b>406.64</b>
<b>No. 5 engine house:</b>				
Carpentering.....	140.41	82.67	.....	223.08
Painting.....	2.00	1.63	.....	3.63
Tinning.....	32.38	27.76	.....	60.14
Plumbing.....	.50	.71	.....	1.21
<b>Total.....</b>	<b>175.29</b>	<b>112.77</b>	<b>.....</b>	<b>288.06</b>
<b>No. 6 engine house:</b>				
Carpentering.....	35.88	22.99	.....	58.87
Painting.....	8.82	4.73	.....	13.55
Tinning.....	4.37	1.59	.....	5.96
Plumbing.....	13.00	135.91	.....	148.91
Miscellaneous.....	7.38	.47	.....	7.85
Material drawn by captain.....	.....	.58	.....	.58
<b>Total.....</b>	<b>69.45</b>	<b>166.27</b>	<b>.....</b>	<b>235.72</b>
<b>No. 7 engine house:</b>				
Carpentering.....	120.63	46.57	.....	167.20
Painting.....	15.97	17.74	.....	33.71
Tinning.....	.69	1.36	.....	2.05
Plumbing.....	9.00	7.32	.....	16.32
Miscellaneous.....	13.13	1.94	.....	15.07
Material drawn by captain.....	.....	.11	.....	.11
<b>Total.....</b>	<b>159.42</b>	<b>75.04</b>	<b>.....</b>	<b>234.46</b>
<b>No. 8 engine house:</b>				
Carpentering.....	94.39	83.48	.....	177.87
Painting.....	104.87	35.35	.....	140.22
Tinning.....	16.70	7.78	.....	24.48
Plumbing.....	23.50	8.33	.....	31.83
<b>Total.....</b>	<b>239.46</b>	<b>134.94</b>	<b>.....</b>	<b>374.40</b>
<b>No. 9 engine house:</b>				
Carpentering.....	106.28	88.37	.....	194.65
Painting.....	29.88	13.65	.....	43.53
Plumbing.....	18.50	42.66	.....	61.16
Heating.....	9.38	1.86	.....	11.24
Steam fitting.....	2.44	2.47	.....	4.91
Miscellaneous, constructing iron stalls and rewire trips.....	186.76	234.02	.....	420.78
Machine work.....	.....	.....	\$16.33	16.33
Material drawn by captain.....	.....	6.01	.....	6.01
<b>Total.....</b>	<b>353.24</b>	<b>389.04</b>	<b>16.33</b>	<b>758.61</b>
<b>No. 10 engine house:</b>				
Carpentering.....	297.68	342.08	.....	639.76
Painting.....	73.64	28.78	.....	102.42
Tinning.....	15.81	13.36	.....	29.17
Plumbing.....	6.25	2.73	.....	8.98
Heating.....	.....	3.00	.....	3.00
Miscellaneous.....	21.13	13.79	.....	34.92
Material drawn by captain.....	.....	8.74	.....	8.74
<b>Total.....</b>	<b>414.51</b>	<b>412.48</b>	<b>.....</b>	<b>826.99</b>
<b>No. 11 engine house:</b>				
Carpentering.....	39.82	30.26	.....	70.08
Painting.....	.47	.....	.....	.47
Tinning.....	14.44	9.41	.....	23.85

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
No. 11 engine house—Continued.				
Plumbing.....	\$3.00	\$0.90	.....	\$3.90
Material drawn by captain.....		5.48	.....	5.48
Total.....	57.73	46.05	.....	103.78
No. 12 engine house:				
Carpentering.....	29.38	39.45	.....	68.83
Painting.....	1.25	.78	.....	2.03
Plumbing.....	21.50	57.15	.....	78.65
Material drawn by captain.....		.33	.....	.33
Total.....	52.13	97.71	.....	149.84
No. 13 engine house:				
Carpentering.....	27.37	42.92	.....	70.29
Painting.....	143.31	36.18	.....	179.49
Plumbing.....	7.50	.64	.....	8.14
Miscellaneous.....	4.69	.86	.....	5.55
Repairing trip.....	2.19	.....	.....	2.19
Total.....	185.06	80.60	.....	265.66
No. 14 engine house:				
Carpentering.....	82.91	61.26	.....	144.17
Painting.....	1.32	.34	.....	1.66
Tinning.....	9.50	5.42	.....	14.92
Plumbing.....	9.01	.62	.....	9.63
Heating.....	8.50	4.34	\$163.40	176.24
Total.....	111.24	71.98	163.40	346.62
No. 15 engine house:				
Carpentering.....	52.22	56.43	.....	108.65
Painting.....	5.50	4.02	.....	9.52
Plumbing.....	11.00	1.53	.....	12.53
Heating.....	.75	2.25	.....	3.00
Miscellaneous.....	2.19	.....	.....	2.19
Total.....	71.66	64.23	.....	135.89
No. 16 engine house:				
Carpentering.....	63.14	52.00	.....	115.14
Painting.....	1.50	.74	.....	2.24
Plumbing.....	6.75	3.56	.....	10.31
Miscellaneous.....	6.00	9.35	.....	15.35
Material drawn by captain.....		.04	.....	.04
Total.....	77.39	65.69	.....	143.08
No. 17 engine house:				
Carpentering.....	121.25	89.29	.....	210.54
Tinning.....	18.75	7.34	.....	26.09
Plumbing.....	5.00	10.12	.....	15.12
Total.....	145.00	106.75	.....	251.75
No. 18 engine house:				
Carpentering.....	148.32	97.15	.....	245.47
Tinning.....	46.50	34.68	.....	81.18
Painting.....	21.57	7.05	.....	28.62
Plumbing.....	20.50	35.45	.....	55.95
Miscellaneous.....	10.19	14.50	.....	24.69
Total.....	247.08	188.83	.....	435.91
No. 19 engine house:				
Carpentering.....	193.25	388.51	.....	581.76
Painting.....	1.22	.55	.....	1.77
Plumbing.....	10.50	.77	.....	11.27
Driving 15 new piles.....			\$362.00	362.00
Total.....	204.97	389.83	362.00	956.80
No. 20 engine house:				
Carpentering.....	10.00	7.95	.....	17.95
Painting.....	6.59	1.05	.....	7.64
Tinning.....	278.82	409.25	.....	688.07
Plumbing.....	45.32	4.84	.....	50.16
Heating.....	.....	.....	70.00	70.00
Total.....	340.73	423.09	70.00	833.82

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 2 engine house:</b>				
Carpentering.....	\$43.94	\$27.71	.....	\$71.65
Painting.....	82.34	22.01	.....	104.35
Tinning.....	1.88	.34	.....	2.22
Plumbing.....	23.25	35.88	.....	59.13
Miscellaneous.....	2.25	.50	.....	2.75
Steam fitting.....	11.88	3.83	.....	15.71
<b>Total.....</b>	<b>165.54</b>	<b>90.27</b>	<b>.....</b>	<b>255.81</b>
<b>No. 4 engine house:</b>				
Carpentering.....	111.81	78.11	.....	189.92
Painting.....	13.83	6.57	.....	20.40
Tinning.....	4.81	1.70	.....	6.51
Plumbing.....	28.00	160.06	.....	188.06
Heating.....	.....	1.75	.....	1.75
<b>Total.....</b>	<b>158.45</b>	<b>248.19</b>	<b>.....</b>	<b>406.64</b>
<b>No. 5 engine house:</b>				
Carpentering.....	140.41	82.67	.....	223.08
Painting.....	2.00	1.63	.....	3.63
Tinning.....	32.38	27.76	.....	60.14
Plumbing.....	.50	.71	.....	1.21
<b>Total.....</b>	<b>175.29</b>	<b>112.77</b>	<b>.....</b>	<b>288.06</b>
<b>No. 6 engine house:</b>				
Carpentering.....	35.88	22.99	.....	58.87
Painting.....	8.82	4.73	.....	13.55
Tinning.....	4.37	1.59	.....	5.96
Plumbing.....	13.00	135.91	.....	148.91
Miscellaneous.....	7.38	.47	.....	7.85
Material drawn by captain.....	.....	.58	.....	.58
<b>Total.....</b>	<b>69.45</b>	<b>166.27</b>	<b>.....</b>	<b>235.72</b>
<b>No. 7 engine house:</b>				
Carpentering.....	120.63	46.57	.....	167.20
Painting.....	15.97	17.74	.....	33.71
Tinning.....	.69	1.36	.....	2.05
Plumbing.....	9.00	7.32	.....	16.32
Miscellaneous.....	13.13	1.94	.....	15.07
Material drawn by captain.....	.....	.11	.....	.11
<b>Total.....</b>	<b>159.42</b>	<b>75.04</b>	<b>.....</b>	<b>234.46</b>
<b>No. 8 engine house:</b>				
Carpentering.....	94.39	83.48	.....	177.87
Painting.....	104.87	35.35	.....	140.22
Tinning.....	16.70	7.78	.....	24.48
Plumbing.....	23.50	8.33	.....	31.83
<b>Total.....</b>	<b>239.46</b>	<b>134.94</b>	<b>.....</b>	<b>374.40</b>
<b>No. 9 engine house:</b>				
Carpentering.....	106.28	88.37	.....	194.65
Painting.....	29.88	13.65	.....	43.53
Plumbing.....	18.50	42.66	.....	61.16
Heating.....	9.38	1.86	.....	11.24
Steam fitting.....	2.44	2.47	.....	4.91
Miscellaneous, constructing iron stalls and rewire trips.....	186.76	234.02	.....	420.78
Machine work.....	.....	.....	\$16.33	16.33
Material drawn by captain.....	.....	6.01	.....	6.01
<b>Total.....</b>	<b>353.24</b>	<b>389.04</b>	<b>16.33</b>	<b>758.61</b>
<b>No. 10 engine house:</b>				
Carpentering.....	297.68	342.08	.....	639.76
Painting.....	73.64	28.78	.....	102.42
Tinning.....	15.81	13.36	.....	29.17
Plumbing.....	6.25	2.73	.....	8.98
Heating.....	.....	3.00	.....	3.00
Miscellaneous.....	21.13	13.79	.....	34.92
Material drawn by captain.....	.....	8.74	.....	8.74
<b>Total.....</b>	<b>414.51</b>	<b>412.48</b>	<b>.....</b>	<b>826.99</b>
<b>No. 11 engine house:</b>				
Carpentering.....	39.82	30.26	.....	70.08
Painting.....	.47	.....	.....	.47
Tinning.....	14.44	9.41	.....	23.85



*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
No. 11 engine house—Continued.				
Plumbing.....	\$3.00	\$0.90	.....	\$3.90
Material drawn by captain.....		5.48	.....	5.48
Total.....	57.73	46.05	.....	103.78
No. 12 engine house:				
Carpentering.....	29.38	39.45	.....	68.83
Painting.....	1.25	.78	.....	2.03
Plumbing.....	21.50	57.15	.....	78.65
Material drawn by captain.....		.33	.....	.33
Total.....	52.13	97.71	.....	149.84
No. 13 engine house:				
Carpentering.....	27.37	42.92	.....	70.29
Painting.....	143.31	36.18	.....	179.49
Plumbing.....	7.50	.64	.....	8.14
Miscellaneous.....	4.69	.86	.....	5.55
Repairing trip.....	2.19		.....	2.19
Total.....	185.06	80.60	.....	265.66
No. 14 engine house:				
Carpentering.....	82.91	61.26	.....	144.17
Painting.....	1.32	1.34	.....	1.66
Tinning.....	9.50	5.42	.....	14.92
Plumbing.....	9.01	.62	.....	9.63
Heating.....	8.50	4.34	\$163.40	176.24
Total.....	111.24	71.98	163.40	346.62
No. 15 engine house:				
Carpentering.....	52.22	56.43	.....	108.65
Painting.....	5.50	4.02	.....	9.52
Plumbing.....	11.00	1.53	.....	12.53
Heating.....	1.75	2.25	.....	3.00
Miscellaneous.....	2.19		.....	2.19
Total.....	71.66	64.23	.....	135.89
No. 16 engine house:				
Carpentering.....	63.14	52.00	.....	115.14
Painting.....	1.50	.74	.....	2.24
Plumbing.....	6.75	3.56	.....	10.31
Miscellaneous.....	6.00	9.35	.....	15.35
Material drawn by captain.....		.04	.....	.04
Total.....	77.39	65.69	.....	143.08
No. 17 engine house:				
Carpentering.....	121.25	89.29	.....	210.54
Tinning.....	18.75	7.34	.....	26.09
Plumbing.....	5.00	10.12	.....	15.12
Total.....	145.00	106.75	.....	251.75
No. 18 engine house:				
Carpentering.....	148.32	97.15	.....	245.47
Tinning.....	46.50	34.68	.....	81.18
Painting.....	21.57	7.05	.....	28.62
Plumbing.....	20.50	35.45	.....	55.95
Miscellaneous.....	10.19	14.50	.....	24.69
Total.....	247.08	188.83	.....	435.91
No. 19 engine house:				
Carpentering.....	193.25	388.51	.....	581.76
Painting.....	1.22	.55	.....	1.77
Plumbing.....	10.50	.77	.....	11.27
Driving 15 new piles.....			\$362.00	362.00
Total.....	204.97	389.83	362.00	956.80
No. 20 engine house:				
Carpentering.....	10.00	7.95	.....	17.95
Painting.....	6.59	1.05	.....	7.64
Tinning.....	278.82	409.25	.....	688.07
Plumbing.....	45.32	4.84	.....	50.16
Heating.....			70.00	70.00
Total.....	340.73	423.09	70.00	833.82

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 21 engine house:</b>				
Painting.....	\$13.87	\$6.57	.....	\$20.44
Plumbing.....	1.50	.48	.....	1.98
Miscellaneous.....	9.40	.52	.....	9.92
Material drawn by captain.....	.....	3.30	.....	3.30
<b>Total.....</b>	<b>24.77</b>	<b>10.87</b>	<b>.....</b>	<b>35.64</b>
<b>No. 22 engine house:</b>				
Carpentering.....	50.94	15.67	.....	66.61
Painting.....	1.44	.50	.....	1.94
Tinning.....	95.32	219.84	.....	315.16
Heating.....	4.75	1.38	.....	6.13
Plumbing.....	6.81	1.60	.....	8.41
Material drawn by captain.....	.....	3.05	.....	3.05
<b>Total.....</b>	<b>159.25</b>	<b>242.04</b>	<b>.....</b>	<b>401.30</b>
<b>No. 23 engine house:</b>				
Carpentering.....	67.06	32.49	.....	99.55
Plumbing.....	15.50	12.03	.....	27.53
Material drawn by captain.....	.....	5.01	.....	5.01
<b>Total.....</b>	<b>82.56</b>	<b>49.53</b>	<b>.....</b>	<b>132.09</b>
<b>No. 24 engine house:</b>				
Heating.....	1.13	.03	\$6.00	7.16
Plumbing.....	15.00	7.39	.....	22.39
<b>Total.....</b>	<b>16.13</b>	<b>7.42</b>	<b>6.00</b>	<b>29.55</b>
<b>No. 1 truck house:</b>				
Carpentering.....	66.20	61.50	.....	127.70
Painting.....	2.88	3.45	.....	6.33
Tinning.....	7.69	2.24	.....	9.93
Plumbing.....	2.25	.....	.....	2.25
Material drawn by captain.....	.....	8.12	.....	8.12
<b>Total.....</b>	<b>79.02</b>	<b>75.31</b>	<b>.....</b>	<b>154.33</b>
<b>No. 2 truck house:</b>				
Carpentering.....	41.58	36.21	.....	77.79
Painting.....	1.88	4.58	.....	6.46
Tinning.....	14.44	8.30	.....	22.74
Plumbing.....	7.25	6.33	.....	13.58
Heating.....	.....	1.50	.....	1.50
Miscellaneous.....	2.69	.14	.....	2.83
Material drawn by captain.....	.....	6.78	.....	6.78
<b>Total.....</b>	<b>67.84</b>	<b>63.84</b>	<b>.....</b>	<b>131.68</b>
<b>No. 3 truck house:</b>				
Carpentering.....	47.63	29.43	.....	77.06
Painting.....	4.47	4.00	.....	8.47
Tinning.....	22.51	11.83	.....	34.34
Plumbing.....	1.50	.45	.....	1.95
Heating.....	.....	3.00	.....	3.00
<b>Total.....</b>	<b>76.11</b>	<b>48.71</b>	<b>.....</b>	<b>124.82</b>
<b>No. 4 truck house:</b>				
Carpentering.....	130.18	83.09	.....	213.27
Painting.....	3.38	1.51	.....	4.89
Tinning.....	43.12	97.09	.....	140.21
Plumbing.....	17.25	22.68	.....	39.93
Heating.....	.....	6.00	.....	6.00
Material drawn by captain.....	.....	41.30	.....	41.30
<b>Total.....</b>	<b>193.93</b>	<b>251.67</b>	<b>.....</b>	<b>445.60</b>
<b>No. 5 truck house:</b>				
Carpentering.....	284.74	153.51	.....	438.25
Painting.....	2.03	1.43	.....	3.46
Plumbing.....	15.25	8.77	.....	24.02
Heating.....	.....	11.00	.....	11.00
<b>Total.....</b>	<b>302.02</b>	<b>174.71</b>	<b>.....</b>	<b>476.73</b>
<b>No. 6 truck house:</b>				
Carpentering.....	54.45	35.48	.....	89.93
Tinning.....	15.63	5.60	.....	21.23
Plumbing.....	4.75	.16	.....	4.91

*Repairs and improvements to engine houses and grounds, 1913—Continued.*

Class of work.	Labor.	Material.	Contract.	Total.
No. 6 truck house—Continued.				
Heating.....		\$16.50		\$16.50
Material drawn by captain.....		.43		.43
Total.....	\$74.83	58.17		133.00
No. 7 truck house:				
Carpentering.....	116.19	71.88		188.07
Painting.....	12.01	4.73		16.79
Tinning.....	21.81	8.24		30.05
Plumbing.....	17.00	3.66		20.66
Miscellaneous.....	27.07	24.57		51.64
Total.....	194.08	113.13		307.21
No. 9 truck house:				
Carpentering.....	49.88	15.96		65.84
Tinning.....	5.94	1.80		7.74
Plumbing.....	1.25	.38		1.63
Miscellaneous.....	.75			.75
Total.....	57.82	18.14		75.96
No. 10 truck house:				
Carpentering.....	11.25	3.77		15.02
Painting.....	.75	.31		1.06
Plumbing.....	2.25			2.25
Steam fitting.....	3.75	.94		4.69
Miscellaneous.....	6.00			6.00
Total.....	24.00	5.02		29.02
No. 1 chemical house:				
Carpentering.....	60.19	109.29		169.48
Material drawn by captain.....		2.22		2.22
Total.....	60.19	111.51		171.70
No. 2 chemical house:				
Carpentering.....	8.53	6.74		15.27
Plumbing.....	4.50			4.50
Steam fitting.....	18.82	14.96		33.78
Total.....	31.85	21.70		53.55
No. 3 chemical house:				
Carpentering.....	203.48	80.93		284.41
Tinning.....	28.07	9.85		37.92
Miscellaneous.....	18.00	19.35		37.35
Material drawn by captain.....		17.35		17.35
Total.....	249.55	127.48		377.03
No. 5 chemical house:				
Carpentering.....	270.73	138.92		409.65
Painting.....	7.07	37.96		45.03
Steam fitting.....	2.25			2.25
Miscellaneous.....	3.44	.21		3.65
Material drawn by captain.....		.75		.75
Total.....	283.49	177.84		461.33
Fire department stables:				
Tinning.....	124.01	236.68		360.69

## SUMMARY.

Total accounted for on written orders.....	\$11,595.57
Miscellaneous time consumed in shop and at various engines.....	198.19
Material drawn from shop for various uses at engine houses.....	3.05
Pro rata share of purchase of harness.....	10.80
Pro rata share of purchase of collar pads.....	.13
Pro rata share of purchase of cornice brake.....	19.98
Allotment made to sand wharf.....	4.52
Allotment made to engineer stables.....	44.95
Purchase of forage.....	108.00
Purchase of coal.....	7.63
Gas consumed in machine shop.....	3.76
Unexpended.....	3.42
Total.....	12,000.00

*Repairs and improvements to police stations and grounds, 1913.*

[Appropriation, \$5,500.]

Class of work.	Labor.	Material.	Contract.	Total.
<b>No. 1 police station:</b>				
Carpentering.....	\$100.53	\$92.61	.....	\$193.14
Tinning.....	1.50	2.46	.....	3.96
Painting.....	312.67	90.99	.....	403.66
Heating.....	47.72	28.70	\$11.85	88.27
Plumbing.....	31.90	35.73	9.65	77.28
Total.....	494.32	250.49	21.50	766.31
<b>No. 2 police station:</b>				
Painting.....	66.78	14.83	.....	81.61
Plumbing.....	64.44	135.36	.....	199.80
Total.....	131.22	150.19	.....	281.41
<b>No. 3 police station:</b>				
Carpentering.....	12.00	3.61	.....	15.61
Painting.....	.50	.19	.....	.69
Tinning.....	1.38	.....	.....	1.38
Plumbing.....	50.75	3.35	.....	54.10
Heating.....	.....	.....	11.45	11.45
Material drawn by captain.....	.....	.40	.....	.40
Total.....	64.63	7.55	11.45	83.63
<b>No. 4 police station:</b>				
Carpentering.....	259.05	112.48	.....	371.53
Painting.....	16.73	7.10	.....	23.83
Tinning.....	93.25	148.92	.....	242.17
Plumbing.....	54.56	15.63	.....	70.19
Heating.....	9.63	1.65	.....	11.28
Miscellaneous.....	6.25	22.16	14.00	42.41
Material drawn by captain.....	.....	2.52	.....	2.52
Total.....	439.47	310.46	14.00	763.93
<b>No. 5 police station:</b>				
Carpentering.....	8.44	11.63	.....	20.07
Painting.....	118.41	32.74	.....	151.15
Tinning.....	2.75	1.97	.....	4.72
Plumbing.....	29.25	.68	.....	29.93
Heating.....	.....	.....	2.50	2.50
Total.....	158.85	47.02	2.50	208.37
<b>No. 6 police station:</b>				
Carpentering.....	342.06	171.63	.....	513.69
Tinning.....	15.75	16.66	.....	32.41
Painting.....	162.78	32.82	.....	195.60
Plumbing.....	33.75	50.79	.....	84.54
Heating.....	6.19	10.96	10.50	27.65
Total.....	560.53	282.86	10.50	853.89
<b>No. 7 police station:</b>				
Carpentering.....	158.50	86.49	.....	244.99
Painting.....	3.76	1.15	.....	4.91
Tinning.....	4.56	3.28	.....	7.84
Plumbing.....	28.94	40.50	.....	69.44
Heating.....	.....	.....	17.75	17.75
Total.....	195.76	131.42	17.75	344.93
<b>No. 8 police station:</b>				
Carpentering.....	160.66	45.92	.....	206.58
Painting.....	110.35	46.16	.....	156.51
Tinning.....	8.25	10.88	.....	19.13
Plumbing.....	3.25	1.83	.....	5.08
Heating.....	78.29	234.84	8.50	321.63
Material drawn by captain.....	.....	.95	.....	.95
Total.....	360.80	340.58	8.50	709.88
<b>No. 9 police station:</b>				
Carpentering.....	33.13	19.75	.....	52.88
Tinning.....	19.88	6.44	.....	26.32
Painting.....	50.81	15.04	.....	65.85
Plumbing.....	19.44	2.33	.....	21.77
Heating.....	.44	.....	.....	.44
Total.....	123.70	43.56	.....	167.26

*Repairs and improvements to police stations and grounds, 1913—Continued.*

Name of school.	Labor.	Material.	Contract.	Total.
No. 10 police station:				
Carpentering.....	\$27.06	\$6.51	.....	\$33.57
Painting.....	.47	.....	.....	.47
Tinning.....	24.63	12.43	.....	37.06
Steamfitting.....	43.82	36.48	.....	80.30
Plumbing.....	56.00	8.34	.....	64.34
Total.....	151.98	63.76	.....	215.74
No. 11 police station:				
Carpentering.....	98.52	46.56	.....	145.08
Painting.....	2.26	.87	.....	3.13
Tinning.....	79.38	27.89	.....	107.27
Plumbing.....	32.87	48.48	.....	81.35
Heating.....	.....	.....	\$249.50	249.50
Material drawn by captain.....	.....	2.61	.....	2.61
Total.....	213.03	126.41	249.50	588.94
Tenley substation:				
Carpentering.....	15.50	1.38	.....	16.88
Painting.....	3.20	2.93	.....	6.13
Heating.....	5.50	2.78	.....	8.28
Total.....	24.20	7.09	.....	31.29
Harbor precinct:				
Carpentering.....	95.25	101.76	.....	197.01
Painting.....	19.22	12.90	.....	32.12
Tinning.....	34.25	39.76	.....	74.01
Plumbing.....	1.25	.08	.....	1.33
Total.....	149.97	154.50	.....	304.47

SUMMARY.

Total accounted for on written orders.....	\$5,320.05
Miscellaneous time consumed in shop and various stations.....	35.40
Material drawn from shop for various uses at stations.....	40.24
Pro rata share of purchase of harness.....	6.00
Pro rata share of purchase of collar pads.....	.08
Allotment made to sand wharf.....	2.51
Allotment made to engineer stables.....	24.97
Purchase of forage.....	38.30
Purchase of coal.....	7.63
Gas consumed in machine shop.....	2.05
Pro rata share of purchase of cornice brake.....	11.10
Unexpended.....	11.67
Total.....	5,500.00

*Repairs and improvements to school buildings and grounds. For the purpose of completing fireproofing.*

[Appropriation, \$25,000.]

Name of school.	Labor.	Material.	Contract.	Total.
Abbot.....	\$60.94	\$119.84	.....	\$180.78
Adams.....	160.87	87.38	.....	248.25
Addison.....	58.89	76.64	.....	135.53
Ambush.....	48.13	17.64	.....	65.77
Amidon.....	10.50	10.20	.....	20.70
Armstrong.....	67.82	23.06	\$212.00	302.88
Arthur.....	85.13	42.98	.....	128.11
Banneker.....	11.00	50.15	.....	61.15
Bell.....	47.87	23.76	.....	71.63
Bennings.....	71.44	2.12	.....	73.56
Berret.....	5.68	5.24	.....	10.92
Birney.....	21.00	3.13	.....	24.13
Birney Annex.....	183.37	104.33	.....	287.70
Blair.....	72.48	35.65	.....	108.13
Blake.....	106.36	49.63	.....	155.99
Blow.....	2.97	.34	.....	3.31
A. Bowen.....	21.50	9.81	.....	31.31
S. J. Bowen.....	3.44	.51	.....	3.95
Bradley.....	2.25	.40	.....	2.65

*Repairs and improvements to school buildings and grounds. For the purpose of completing fireproofing—Continued.*

Name of school.	Labor.	Material.	Contract.	Total.
Brent.....	\$18.88	\$69.24	.....	\$88.12
Briggs.....	164.11	124.83	.....	288.94
Brightwood.....	390.59	202.00	.....	592.59
Brookland.....	1.07	1.74	.....	2.81
Bruce.....	53.22	45.54	.....	98.76
Bryan.....	26.50	14.12	.....	40.62
Buchanan.....	120.38	9.42	.....	129.80
Bunker Hill.....	5.50	10.02	.....	15.52
Business High.....	54.50	14.22	\$485.00	553.72
Carbery.....	54.06	27.48	.....	81.54
Cardozo.....	8.74	4.69	.....	13.43
Central High.....	120.69	40.98	235.00	396.67
Chevy Chase.....	104.15	37.78	.....	141.93
Cleveland.....	1.75	.36	.....	2.11
Conduit Road.....	2.00	.....	.....	2.00
Congress Heights.....	90.50	100.83	.....	191.33
J. F. Cook.....	52.10	11.11	.....	63.21
H. D. Cooke.....	68.84	23.27	.....	92.11
Corcoran.....	67.34	71.40	.....	138.74
Cranch.....	16.31	6.61	.....	22.92
Curtis.....	525.21	425.65	.....	950.86
Deanwood.....	191.97	76.16	.....	268.13
Dennison.....	190.49	227.93	.....	418.42
Dent.....	999.83	468.15	.....	1,467.98
Douglas.....	920.48	153.87	.....	1,074.35
Eastern High.....	398.14	422.76	.....	820.90
Eckington.....	29.35	5.05	.....	34.40
Edmonds.....	13.00	.94	.....	13.94
Emery.....	69.21	36.86	.....	106.07
Fillmore.....	393.20	347.16	.....	740.36
Force.....	157.91	58.56	.....	216.47
Franklin.....	36.43	10.25	.....	46.68
B. B. French.....	1.00	3.10	.....	4.10
Gage.....	114.35	111.52	.....	225.87
Gales.....	65.45	50.89	.....	116.34
Garfield.....	13.47	5.79	.....	19.26
Garnet.....	47.22	26.51	.....	73.73
Garrison.....	75.10	42.18	.....	117.28
Giddings.....	84.31	56.68	.....	140.99
Grant.....	13.72	5.20	98.00	116.92
Greenleaf.....	22.63	9.02	.....	31.65
Harrison.....	3.00	.34	.....	3.34
Hayes.....	5.00	4.06	.....	9.06
Henry.....	54.87	175.15	.....	230.02
Hilton.....	4.81	.27	.....	5.08
Hubbard.....	15.50	8.01	.....	23.51
Hyde.....	22.21	8.84	.....	31.05
Jackson.....	28.06	10.26	.....	38.32
Jefferson.....	56.68	129.76	275.00	461.44
Johnson Annex.....	50.73	35.56	.....	86.29
Jones.....	98.37	28.63	.....	127.00
Ketcham.....	56.31	16.52	.....	72.83
Langdon.....	50.81	23.58	.....	74.39
Langston.....	16.37	13.12	.....	29.49
Lenox.....	59.73	35.28	.....	95.06
Lincoln.....	104.06	40.48	.....	144.54
Logan.....	2.81	3.95	.....	6.76
Lovejoy.....	31.01	58.59	.....	89.54
Ludlow.....	26.50	12.33	.....	38.83
M Street High.....	147.43	98.93	.....	246.36
Madison.....	16.65	6.99	.....	23.64
Magruder.....	4.00	1.37	.....	5.37
Maury.....	49.19	10.49	.....	59.68
McKinley.....	93.07	33.56	.....	126.63
Monroe.....	120.92	32.81	.....	153.73
Montgomery.....	1.00	4.04	.....	5.04
Morgan.....	6.50	3.69	.....	10.19
Morse.....	108.41	29.06	.....	137.47
New Mott.....	10.69	7.41	.....	18.10
Orr.....	1.00	3.24	.....	4.24
Peabody.....	46.30	78.74	.....	125.04
Petworth.....	22.00	3.97	.....	25.97
Phelps.....	34.00	40.03	.....	74.03
Phillips.....	18.31	9.39	.....	27.70
Pierce.....	74.94	27.70	.....	102.64
Polk.....	2.94	4.69	.....	7.63
Potomac.....	2.25	.....	.....	2.25
Powell.....	68.13	16.34	.....	84.47
Randall.....	574.30	346.93	.....	921.23
Reno.....	189.47	52.01	.....	241.48
Ross.....	36.90	3.62	.....	40.52

Repairs and improvements to school buildings and grounds. For the purpose of completing fireproofing—Continued.

Name of school.	Labor.	Material.	Contract.	Total.
Seaton.....	\$5.01	\$2.91	.....	\$7.92
Simmons.....	64.63	42.33	.....	106.96
Slater.....	27.75	110.46	.....	138.21
Smallwood.....	.31	.21	.....	.52
H. Smothers.....	39.03	13.66	.....	52.69
Stanton.....	33.00	116.42	.....	149.42
Stevens.....	4.68	1.20	.....	5.88
Sumner.....	14.25	3.38	.....	17.63
Takoma.....	4.00	2.08	.....	6.08
Taylor.....	2.50	1.83	.....	4.33
Tenley.....	706.59	255.33	.....	961.92
Threlkeld.....	77.39	37.86	.....	115.25
Toner.....	57.06	91.03	.....	148.09
Towers.....	22.62	67.88	.....	90.50
Twining.....	42.07	74.11	.....	116.18
Tyler.....	87.55	45.09	.....	132.64
Van Buren Annex.....	2.81	1.20	.....	4.01
Van Ness.....	4.00	.....	.....	4.00
Wallach.....	453.65	193.32	.....	646.97
Webb.....	34.25	14.76	.....	49.01
Webster.....	36.45	71.20	.....	107.65
Weightman.....	29.87	12.74	.....	42.61
Western High.....	56.59	41.96	.....	98.55
Wilson.....	1.69	3.58	.....	5.27
Woodburn.....	113.87	101.92	.....	215.79
Wormley.....	2.44	4.04	.....	6.48

SUMMARY.

Total accounted for on written orders.....	\$17,727.54
Total contracts.....	1,305.00
Miscellaneous time consumed in shop and various schools.....	3,199.84
Miscellaneous material drawn from shop for various uses at schools.....	2,325.14
Allotment to sand wharf.....	53.67
Allotment to engineer stables.....	94.88
Purchase of forage.....	224.06
Purchase of coal.....	53.41
Unexpended.....	36.46
Total.....	25,000.00

Contingent and miscellaneous expenses, District of Columbia, 1913.

ALTERATION OF REPAIR SHOP AND YARD.

Appropriation.....	\$3,500.00
Expended.....	3,495.69
Unexpended.....	4.31

MOTOR TRUCK, SUPERINTENDENT OF REPAIRS.

Appropriation.....	\$480.00
Expended.....	476.10
Unexpended.....	3.90

Courts, District of Columbia, 1913—Police court, repairs to building.

Appropriation.....	\$750.00
Expended.....	748.28
Unexpended.....	1.72

Expended from various allotments made to this office from other departments of the District of Columbia for repairs to their respective buildings and equipment during the fiscal year 1913. \$14,270.72

*Report of inspection of steam boilers, public schools, 1912-13.*

School.	Boilers.	High pressure.	Low pressure.	Length.	Diameter.	Tubes.	Size of tubes.	Manholes.	Size of manholes.	Tested.	Safety blows.	Date of inspection.	Remarks.
				<i>Ft.</i>	<i>In.</i>		<i>In.</i>		<i>Inches.</i>			1912.	
Armstrong Manual Training.	2	2	...	15½	...	56	3½	1	11 by 15	180	120	June 21	Shells and tubes in good condition.
Business High	3	1	...	16	66	66	5	2	12 by 16	120	80	June 29	Repaired fire arch, installed new grate bars, and repacked steam pumps.
Do.	...	2	...	16	66	66	3	2	12 by 16	120	80	...	
Do.	...	3	...	16	66	66	3	2	12 by 16	120	80	...	Put in new indirect coil.
Brookland.	2	1	...	12	42	52	3	1	11 by 15	100	65	July 10	
Do.	...	1	...	12	42	38	3	1	11 by 15	65	25	...	Put new diaphragm in regulator.
Brightwood.	1	...	1	12	42	43	3	1	11 by 15	70	25	Aug. 15	
Bowen, S. J.	1	1	...	14	54	64	3	1	11 by 15	120	75	July 3	Renewed blowlines.
Central High.	4	...	3	12	52	64	3	1	11 by 15	75	25	July 12	Installed boiler breeching.
Do.	...	1	...	...	...	...	...	...	...	100	80	...	Relined fire box and cleaned smokestacks.
Cranch.	2	...	2	10	42	38	3	1	11 by 15	75	25	July 8	
Curtis.	2	...	2	12	54	65	3	2	11 by 15	80	25	Aug. 16	Shells and tubes in good condition.
Dennison.	2	...	2	10	42	49	3	2	11 by 15	80	25	July 15	Do.
Dent.	...	...	...	...	...	...	...	...	...	...	...	...	Two down-draft sectional boilers; good condition.
Eastern High.	2	...	2	14	48	54	3	2	11 by 15	100	25	July 8	Shells and tubes in good condition.
Emery.	2	...	2	14	54	54	3	1	11 by 15	100	25	July 10	Replaced three tubes, and repaired arch over fire door, both boilers.
Force.	2	...	2	12	42	46	3	1	11 by 15	90	25	July 17	Boiler retubed.
Franklin.	2	...	2	12	48	48	3	1	11 by 15	60	30	July 15	Retubed both boilers and repaired arch.
Gales.	2	...	2	10	42	49	3	1	11 by 15	80	25	July 13	Renewed blow-off.
Garnet.	2	...	2	12	42	46	3	1	11 by 15	80	25	July 18	Shells and tubes in good condition.
Grant.	2	...	2	10	42	42	3	1	11 by 15	80	25	July 22	Do.
Henry.	2	...	2	12	46	42	3	1	11 by 15	100	25	July 12	Repaired return in back of boiler.
Jefferson.	2	2	...	12	42	46	3	1	11 by 15	80	30	July 5	Shells and tubes in good condition.
Lincoln.	2	...	2	10	42	38	3	1	11 by 15	100	25	July 3	Do.
M Street heating plant.	2	2	...	21	48	139	4	2	11 by 15	180	125	June 19	Do.
McKinley Manual Training.	6	6	...	...	...	...	...	...	...	2187	125	June 25	Repaired valves on blowlines. Renewed blow-off valve. Boiler retubed and handhole plate repaired.
Do.	...	...	...	...	...	...	...	...	...	3187	125	...	
Do.	...	...	...	...	...	...	...	...	...	4187	125	...	
Do.	...	...	...	...	...	...	...	...	...	6187	125	...	
Do.	...	...	...	...	...	...	...	...	...	6187	125	...	
Peabody.	2	...	2	14	54	54	3	1	11 by 15	75	25	June 9	Repaired valves on blowlines.
Stevens.	2	...	2	12	42	46	3	1	11 by 15	85	25	July 22	Renewed blow-off valve.
Seaton.	2	...	2	10	42	40	3	2	11 by 15	75	25	Aug. 16	Boiler retubed and handhole plate repaired.
Summer.	2	...	2	12	48	54	3	1	11 by 15	90	25	July 17	Shells and tubes in good condition.
Syphax.	1	...	...	14	54	52	3	1	11 by 15	120	75	July 3	Do.
Tenley.	1	...	1	10	45	46	3	1	11 by 15	70	25	Aug. 14	Changed water column from bottom of boiler to front head, relined fire box, and provided additional buckstays.
Wallach.	2	...	2	12	46	52	3	1	11 by 15	70	25	Aug. 20	Retubed boiler, provided soft-coal grates, and renewed blowpipe and put new blow-off and return in back of boiler.
Webster.	2	...	2	14	54	54	3	1	11 by 15	80	25	July 17	Repaired interior brickwork.
Western High	2	2	...	16	60	82	3	2	11 by 15	120	70	Aug. 13	Shells and tubes in good condition.
													Replaced six defective tubes.

<sup>1</sup> 25 horsepower, upright.  
<sup>2</sup> Boiler No. 1.

<sup>3</sup> Boiler No. 2.  
<sup>4</sup> Boiler No. 3.

<sup>6</sup> Boiler No. 4.  
<sup>6</sup> Boilers Nos. 5 and 6.



## REPORT OF THE INSPECTOR OF GAS METERS.

WASHINGTON, D. C., October 8, 1913.

SIR: I have the honor to transmit herewith a report of the work of this office during that portion of the last fiscal year extending from July 1, 1912, to March 3, 1913. On the day following the last date this office by act of Congress came under the authority of the newly created public utilities commission of the District of Columbia.

The regulations in regard to the inspection of the gas provide that the illuminating power of the gas shall be equal to 22 candles by the Bunsen photometer, using the Bray slit union burner No. 7, consuming 5 cubic feet of gas per hour, and such gas shall not contain more than 5 grains of ammonia in 100 cubic feet, nor more than 20 grains of sulphur in any form in 100 cubic feet, and shall be free of the impurity known as hydrogen sulphide. Daily inspections are made of the gas supplied by the two gas companies.

In compliance with the law, four gas-testing stations are maintained by this office. Three of these stations are in the territory supplied by the Washington Gas Light Co., namely, the central testing station and office headquarters at the corner of Tenth and D Streets NW.; the southeast testing station at 500 D Street SE.; and the northwest testing station at 1405½ Fourteenth Street NW. The fourth station is maintained in the territory supplied by the Georgetown Gas Light Co., and is known as the Georgetown testing station. Previous to December 3, 1912, this station was located at No. 1226 Wisconsin Avenue, but on that date the testing apparatus was moved to rooms at the corner of Wisconsin and Dumbarton Avenues, about one block north of the old location.

The gas supplied by the two companies in the District of Columbia is a mixture in varying proportions of coal gas and carburetted water gas.

## WASHINGTON GAS LIGHT CO.

## ILLUMINATING POWER.

Five hundred and twenty-two official photometric determinations were made of the gas supplied by the Washington Gas Light Co., yielding an average of 23.18 candles. Two hundred and five of these determinations were made at the central testing station and gave an average of 23.12 candles for that station, with 26.45 candles, on February 25, 1913, as the highest result, and 20.26 candles, on December 13, 1912, as the lowest. At the southeast testing station 159 determinations gave an average of 23.15 candles, with 26.85 candles, on October 22, 1912, as the highest test, and 20.05, on July 19, 1912, as the lowest candlepower for that station. At the northwest testing station 158 determinations gave an average of 23.37 candles, with 26 candles, on January 20, 1913, as the highest, and 19.38 candles, on February 10, 1913, as the lowest result obtained at this station.

On 2 days during the year the tests at all 3 stations showed that the gas was below the legal standard of 22 candles; on 8 days it was found to be below at two stations, and on 14 days it was below at some one station. In most of these instances the tests showed that the illuminating power was between 21 and 22 candles.

## PURITY.

*Ammonia.*—The average amount of ammonia found in the gas at the central testing station was 0.14 of a grain in 100 cubic feet, with 1.18 grains, on July 10, 1912, as the largest amount. On 89 days the tests showed no ammonia present in the gas at this station. The mean amount of ammonia found in the gas at the southeast testing station was 0.45 of 1 grain, with 1.45 grains, on October 18, 1912, as the maximum amount. On 23 days the tests showed no ammonia present in the gas at this station.

*Total sulphur.*—The mean of the total sulphur determinations at the central station was 6.29 grains in 100 cubic feet, with a maximum of 7.50 grains, on July 10, 1912, and a minimum of 4.21 grains, on October 14, 1912. The mean sulphur content of the gas at the southeast station was found to be 5.62 grains in 100 cubic feet, with 7.40 grains, on January 7, 1913, as a maximum, and 4.40 grains, on November 18, 1912, as a minimum result.

*Hydrogen sulphide.*—On three days during the year the tests for hydrogen sulphide showed this impurity in the gas at both the central and the southeast stations; on two days it was present at the central station only, and on two days was found in the gas at the southeast station only. At no time during the year was this impurity found in the gas at the northwest station.

## PRESSURE.

By means of an automatic pressure register installed at each of the three stations in the territory of the Washington Gas Light Co. a continuous record was obtained of the gas pressure in the mains. This record is complete except for the month of August at the northwest station when the recording instrument was out of order and undergoing repairs. The means and extremes of the pressures recorded at these three stations are as follows:

Station.	Mean.	Maximum.	Minimum.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
Central.....	3.04	4.84	1.92
Southeast.....	3.78	6.02	1.70
Northwest.....	3.16	5.50	1.50

The extreme pressures given here do not represent the normal daily fluctuations, but were the result of some unusual conditions and of short duration.

## GEORGETOWN GAS LIGHT CO.

## ILLUMINATING POWER.

Two hundred official photometric determinations of the gas supplied by the Georgetown Gas Light Co. gave a mean of 22.59 candles, with a maximum of 25.56 candles, on September 5, 1912, and a minimum of 18.64 candles, on October 29, 1912. On 26 days the tests showed the illuminating power of the gas supplied by this company to be below the legal standard of 22 candles.

## PURITY.

*Ammonia.*—The average amount of ammonia found in the gas supplied by this company was 0.39 of 1 grain in 100 cubic feet, with 1.92 grains, on October 8, 1912, as the highest amount. On 31 days the tests showed no ammonia present in the gas.

*Total sulphur.*—The mean amount of sulphur found was 8.77 grains in 100 cubic feet, with 14.51 grains, on September 3, 1912, as a maximum amount, and 5.42 grains, on July 17, 1912, as a minimum.

*Hydrogen sulphide.*—The tests for hydrogen sulphide showed this impurity present in the gas on 32 days during the year.

## PRESSURE.

The pressure register at the Georgetown station was a very old instrument, and early in the year it gave trouble, requiring almost daily adjustment, and even then the results obtained were not considered reliable. In December a new pressure recorder was installed, and the mean pressure recorded at this station since that date was 3.82 inches, with 5.50 inches as a maximum, and 1.30 inches as a minimum.

Monthly data in regard to illuminating power, purity, and pressure of the gas supplied by the two companies will be found in Tables I to VIII.

## METER INSPECTIONS.

During the time covered by this report this office inspected 16,450 gas meters classified as follows: Two thousand seven hundred and twenty-nine new meters; 12,424 repaired; 763 consumers' complaints, and 534 company complaints.

Seven hundred and twenty-two of these consumers' complaint meters were tested on request of consumers supplied by the Washington Gas Light Co. Of this number, 401, or 55.54 per cent, were fast, average error 4.97 per cent; 56, or 7.76 per cent, were slow, average error 6.86 per cent; and 265, or 36.70 per cent, were correct. It is of interest to note that 63 per cent of these fast meters did not register more than 5 per cent fast; 31 per cent ran from 5 to 8 per cent fast; and 6 per cent registered from 8 to 14 per cent fast.

Five hundred and thirty meters were inspected on request of the Washington Gas Light Co. Of this number, 23, or 4.34 per cent, were fast, average error 4.94 per cent; 316, or 59.62 per cent, were slow, average error 21.66 per cent; 22, or 4.15 per cent, were correct; and 169, or 31.89 per cent, failed to register the gas passing through them.

Forty-one meters were inspected on the request of consumers supplied by the Georgetown Gas Light Co. Of this number, 21, or 51.22 per cent, were fast, average error 4.87 per cent; 19, or 46.34 per cent, were correct; and 1 was 6 per cent slow.

Four meters were inspected for the Georgetown Gas Light Co. Two were found fast, average error 4.50 per cent, and 2 were found to register correctly.

Monthly data in regard to the meter inspections will be found in Tables IX and X.

#### FEEs.

A fee of 50 cents is collected for each new or complaint meter, and 20 cents for each repaired meter. The fees thus collected amounted to \$4,497.30, which sum was paid by this office to the collector of taxes, as required by law.

#### DISTRICT GAS BILLS.

In further compliance with commissioners' order No. 241807, dated September 28, 1903, the statements of all gas meters in District buildings were verified each month by this office, and the resulting gas bills received the certification of this office.

It is my pleasant duty to testify to the efficient service cheerfully rendered at all times by my associates in this office.

Respectfully submitted.

ELMER G. RUNYAN,  
Inspector of Gas and Meters.

Capt. J. L. SCHLEY,  
Corps of Engineers, United States Army,  
Assistant to Engineer Commissioner, District of Columbia.

TABLE I.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1912, to Mar. 3, 1913 (central testing station).*

Month.	Number of observations. <sup>1</sup>	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July.....	26	22.83	24.38	20.49	0.32	1.18	None.	6.36	7.50	4.73	.....
August.....	27	23.09	24.14	22.06	.12	.51	None.	5.97	6.93	5.04	.....
September.....	24	22.59	24.11	20.29	.23	.54	None.	6.10	6.89	4.72	1
October.....	27	23.49	25.17	22.03	.17	.52	None.	5.96	6.92	4.21	3
November.....	25	22.80	23.79	22.04	.11	.37	None.	5.97	6.45	5.40	.....
December.....	25	22.64	23.98	20.26	.10	.34	None.	6.38	6.96	5.53	1
January.....	26	23.27	24.98	21.02	.03	.23	None.	6.74	7.31	6.19	.....
February.....	23	23.76	26.45	21.59	.04	.26	None.	6.89	7.49	6.52	.....
March (1 to 3).....	2	24.40	24.76	24.03	None.	None.	None.	7.14	7.30	6.98	.....
	205	23.12	26.45	20.26	.14	1.18	None.	6.29	7.50	4.21	5

<sup>1</sup> Each observation consists of 10 readings on the Bunsen photometer at intervals of one minute.

TABLE II.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1912, to Mar. 3, 1913 (southeast testing station).*

Month.	Number of observations. <sup>1</sup>	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July.....	21	22.83	23.95	20.05	0.75	1.13	None.	5.86	6.67	4.56	.....
August.....	15	23.24	24.13	22.20	.49	.88	None.	5.50	6.76	4.76	.....
September.....	20	23.27	24.48	21.81	.64	1.07	None.	5.70	7.08	4.90	1
October.....	24	24.15	26.85	22.18	.68	1.45	None.	5.34	6.00	4.64	2
November.....	15	23.19	24.40	22.05	.42	.94	None.	5.16	5.70	4.40	.....
December.....	20	22.45	23.77	20.74	.33	.62	None.	5.19	6.06	4.61	2
January.....	22	22.95	24.45	20.83	.19	.75	None.	5.58	7.40	4.80	.....
February.....	21	22.97	25.92	20.36	.16	.68	None.	6.26	7.13	5.27	.....
March (1 to 3).....	1	23.26	23.26	23.26	.....	.....	.....	.....	.....	.....	.....
	159	23.15	26.85	20.05	.45	1.45	None.	5.62	7.40	4.40	5

<sup>1</sup> Each observation consists of 10 readings on the Bunsen photometer at intervals of one minute.

TABLE III.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1912, to Mar. 3, 1913 (northwest testing station).*

Month.	Number of observations. <sup>1</sup>	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July.....	20	23.26	25.40	20.48	.....	.....	.....	.....	.....	.....	.....
August.....	14	23.23	24.09	22.10	.....	.....	.....	.....	.....	.....	.....
September.....	20	23.27	25.11	19.61	.....	.....	.....	.....	.....	.....	.....
October.....	23	23.36	25.34	21.10	.....	.....	.....	.....	.....	.....	.....
November.....	19	23.20	25.22	21.58	.....	.....	.....	.....	.....	.....	.....
December.....	17	23.21	25.77	19.90	.....	.....	.....	.....	.....	.....	.....
January.....	26	23.76	26.00	21.56	.....	.....	.....	.....	.....	.....	.....
February.....	18	23.53	25.88	19.38	.....	.....	.....	.....	.....	.....	.....
March (1 to 3).....	1	23.22	23.22	23.22	.....	.....	.....	.....	.....	.....	.....
	158	23.37	26.00	19.38	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Each observation consists of 10 readings on the Bunsen photometer at intervals of one minute.TABLE IV.—*Illuminating power and purity of the gas supplied by the Georgetown Gas Light Co. from July 1, 1912, to Mar. 3, 1913 (Georgetown testing station).*

Month.	Number of observations. <sup>1</sup>	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July.....	26	22.18	23.82	20.13	0.86	1.62	0.21	8.05	13.57	5.42	5
August.....	27	22.62	23.62	21.75	.50	.88	None.	10.41	12.89	7.92	.....
September.....	24	22.79	25.56	19.37	.29	1.34	None.	11.22	14.51	8.61	13
October.....	27	21.90	23.73	18.64	.83	1.92	None.	8.94	10.00	7.87	8
November.....	25	22.55	24.02	20.54	.16	.41	None.	7.88	11.05	5.66	.....
December.....	20	22.74	24.11	20.88	None.	None.	None.	7.05	8.48	6.02	.....
January.....	26	23.00	24.01	21.81	.29	1.03	None.	8.16	11.62	6.59	.....
February.....	23	23.02	23.98	21.20	.15	1.04	None.	7.84	9.08	6.68	6
March (1 to 3).....	2	22.96	23.09	22.83	.....	.....	.....	.....	.....	.....	.....
	200	22.59	25.56	18.64	.39	1.92	None.	8.77	14.51	5.42	32

<sup>1</sup> Each observation consists of 10 readings on the Bunsen photometer at intervals of one minute.TABLE V.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the central testing station from July 1, 1912, to Mar. 3, 1913.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
July.....	<i>Inches.</i> 2.78	<i>Inches.</i> 3.84	<i>Inches.</i> 1.96
August.....	2.78	3.82	1.92
September.....	2.85	3.80	1.96
October.....	2.94	3.92	1.98
November.....	3.08	4.30	1.98
December.....	3.30	4.60	2.12
January.....	3.32	4.54	2.02
February.....	3.28	4.84	2.10
March (1 to 3).....	3.22	4.36	2.13
	3.04	4.84	1.92

TABLE VI.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the southeast testing station from July 1, 1912, to Mar. 3, 1913.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	3.51	5.40	2.20
August.....	3.50	5.00	2.20
September.....	3.55	5.10	2.20
October.....	3.66	5.40	2.00
November.....	3.83	6.00	1.70
December.....	4.10	6.02	2.30
January.....	4.05	6.00	2.30
February.....	4.02	6.00	2.40
March (1 to 3).....	3.92	5.60	2.50
	3.78	6.02	1.70

TABLE VII.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the northwest testing station from July 1, 1912, to Mar. 3, 1913.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	3.18	4.10	2.34
August.....			
September.....	3.26	4.10	2.00
October.....	3.26	4.40	2.20
November.....	3.46	4.90	1.50
December.....	3.64	5.40	2.40
January.....	3.63	5.00	2.30
February.....	3.63	5.50	2.40
March (1 to 3).....	3.65	4.60	2.50
	3.46	5.50	1.50

TABLE VIII.—*Pressure of the gas supplied by the Georgetown Gas Light Co., as registered at the Georgetown testing station from July 1, 1912, to Mar. 3, 1913.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....			
August.....			
September.....			
October.....			
November.....			
December.....	3.64	5.30	1.90
January.....	3.91	5.50	2.20
February.....	3.91	5.40	1.30
March (1 to 3).....	3.67	4.70	2.60
	3.82	5.50	1.30





## REPORT OF THE PERMIT CLERK.

WASHINGTON, D. C., August 28, 1913.

SIR: I have the honor to submit the annual report of the work of this office, giving the character and number of permits issued during the fiscal year ending June 30, 1913.

*Permits issued for which fees were paid.*

	1912						1913						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water:													
Connections.....	222	245	118	174	243	136	110	112	177	188	142	149	2,016
Repairs.....	134	116	93	126	83	103	75	58	84	109	80	109	1,170
Sewer:													
Connections.....	245	265	128	219	276	163	138	104	217	189	201	188	2,333
Repairs.....	103	65	87	81	95	61	71	58	74	70	57	59	881
Gas:													
Connections.....	370	431	228	270	291	159	205	236	241	340	290	271	3,332
Repairs.....	22	36	76	335	70	48	26	15	114	33	23	15	813
Auto tire inflating apparatus.....				1		1	1					1	4
Carriage blocks and hitching posts.....	1						1			1	1		4
Conduits.....	32	38	17	12	27	29	25	28	25	23	15	35	306
Gas mains.....	19	15	22	10	17	4	5	5	16	23	13	9	188
Guard stones.....		1	1	2	1					2	3	1	11
Manholes, connect with sewer and enlarge.....	20	40	9	10	12	15	15	20	18	24	12	7	202
Parking fences.....	28	20	17	23	37	21	20	20	31	79	71	41	408
Poles.....	30	20	33	22	46	24	31	45	32	20	33	28	364
Wagon tags.....	128	45	62	139	119	98	67	67	76	101	82	93	1,077
Total.....	1,354	1,337	891	1,424	1,817	862	790	768	1,105	1,202	1,023	1,006	13,079

*Special permits issued without fee.*

	1912						1913						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water, sewer, gas....	72	89	88	111	90	61	55	52	48	73	104	78	921
Blasting.....	2	1	1	3	3	2	4	2	1	2	2	1	24
Bridges across gutter.	4	3		1	1	1	1	1	1	2	6	111	21
Cables, aerial and overhead connections.....	31	22	33	21	50	36	52	34	18	17	27	32	373
Copings.....	165	64	58	45	99	26	29	22	39				547
Driveways.....	8	8	8	10	3	4	3	5	6	6	9	5	75
Engines, move.....	9	8	1	13	5	5	7	4	10	14	8	11	95
Leads, lay and repair	246	149	122	129	172	37	67	42	78	84	132	122	1,380
Parkings:													
Grade.....	83	84	101	88	122	81	64	48	53	2	3	3	732
Pave.....	11	18	9	17	10	2	4	7	7	21	13	14	133
Railings, renew..	13	14	9	4	6	3	7	4	8	4	19	13	104
Renewals.....	33			10	7		6	19	8	16	9	6	114
Roadways and alleys close.....	1	1		2		1		3	1		1		10
Roadways and alleys grade and repair.....	6	1	19	6	3	8	15	9	8	5		2	82
Sidewalks:													
Grade.....			1	2	2	9	2	1	11		1	1	30
Haul across.....	3	6	4	2	2	6	4	3	2	7	4	2	45
Lay and repair...	27	42	25	35	43	26	26	12	11	32	34	39	332
Sidewalks and roadways, occupy.....	1		3	3		1		1					9
Steam and electric railways.....	4		3	2		1	5	4	2	1	1	4	27
Steps on parkings.	185	80	74	64	138	25	49	36	60	40	66	73	890
Stop cock boxes.....	8	2		12			2		12				48
Trees.....	2							1		2	1	1	7
United States Government.....		2	1	1	1	1	5	1	1	2	1	1	17
Walls, retaining.....	12	12	6	8	5		13	1	3	11	6	6	83
Water tables.....	101	21	29	34	91	7	6	5	13	12	7	8	334
Wires, string.....	58	18	26	58	30	19	67	20	33	69	20	18	436
Miscellaneous.....	6	7	5	8	2	5	8	8	9	8	4	9	79
Wagon tags.....	1			4	1		1	1		4	1	4	17
Total.....	1,092	652	626	693	886	379	502	346	443	434	479	453	6,985



Two thousand and twenty communications were referred to this office. Briefs were made of these on cards, permits issued when necessary, reports made, papers indorsed and returned to the respective division having supervision over the inspection of the work for which the permits were issued.

A written report was made daily of all permits issued for excavations in the public space and was forwarded to the engineer of highways.

Eighteen thousand nine hundred and seventy applications for permits were sorted, arranged according to location, and filed for ready reference. Attention is respectfully invited to the fact that this branch of the work represented an increase over the work of last year of nearly 5,000 pieces filed.

In connection with this tremendous increase in the amount of work performed by this office, I wish to bring to your attention the important assistance given me by the assistant permit clerk, H. E. Brooks, and the index clerk, G. A. Ourand. Despite the quantity of work required to be performed by those in this office the duties of my two assistants have at all times been willingly and efficiently performed. Although the duties of this office are daily increasing the number of employees remains the same as it has for the past 20 years. This growth is especially marked in the number of telephone calls received and answered. This branch of the office work requires the constant service of one person. In view of this increasing business of the office I respectfully recommend the appointment of an assistant index clerk.

Very respectfully,

H. M. WOODWARD,  
Permit Clerk, District of Columbia.

Capt. MARK BROOKE,  
Corps of Engineers, United States Army.  
Assistant to Engineer Commissioner, District of Columbia.

## REPORT OF THE AUTOMOBILE BOARD.

WASHINGTON, D. C., August 25, 1913.

SIR: I have the honor to submit the following report of the automobile board for the fiscal year ended June 30, 1913:

There were examined at the regular meetings of the board, held on the first and third Fridays in each month, and by the secretary and members at other times during the year, 2,944 persons for permits to operate motor vehicles in the District of Columbia, as required by the police regulations. Of those examined and recommended permits be issued them, 2,183 were to operate vehicles of the gasoline type, 223 of the electric type, 19 of the steam type, and 312 for motor cycles; also 111 to operate motor vehicles of the United States and District of Columbia Governments used for public business. Of those examined, 96 were not satisfactory and not recommended. Two permits were revoked on recommendation of the major and superintendent of the Metropolitan police.

There were 447 duplicate operator's permits issued, affidavits being filed that the originals had been lost or destroyed.

Revenue received from permits was \$6,246 paid by residents of the District of Columbia and \$572 by nonresidents complying with the amendment to the police regulations dated January 16, 1913.

"Enamel metal identification number tags" were issued for 3,936 motor vehicles—146 for electric pleasure, 64 for electric trucks, 2,730 for gasoline pleasure, 297 for gasoline trucks, 24 for steam, and 675 for motor cycle types; also 100 for vehicles of the United States Government and the District of Columbia. The revenue received amounted to \$7,872. Duplicate tags were procured for 178 vehicles to replace those lost and defaced.

The number of applicants examined to operate motor vehicles and the type of motor of vehicle to be operated is shown in the table following; also the revenue derived therefrom paid to the collector of taxes District of Columbia.

	Electric.	Gasoline.	Steam.	Motor cycle.	Not competent.	Revoked.	United States and District of Columbia employees, no fee.	Duplicates.	Paid for permits.
<b>1912.</b>									
July.....	19	157	.....	46	10	.....	11	30	\$594
August.....	23	155	2	27	13	.....	5	27	574
September.....	21	145	2	33	14	.....	5	36	548
October.....	18	203	2	19	20	.....	13	38	550
November.....	24	189	1	26	6	.....	8	33	568
December.....	12	141	3	13	5	1	9	27	370
<b>1913.</b>									
January.....	19	156	.....	11	3	.....	16	38	434
February.....	21	156	.....	23	5	1	5	31	400
March.....	8	152	.....	27	7	.....	2	24	426
April.....	12	214	4	38	13	.....	6	68	544
May.....	26	258	4	29	.....	.....	15	60	658
June.....	20	257	1	20	.....	.....	8	35	580
Total.....	223	2,183	19	312	96	2	111	447	6,246

The number of "enamel metal identification tags" issued and the different kinds of motor vehicles to which the number tags were assigned, also the amount paid in fees, is shown in the table following:

	Electric.		Gasoline.		Steam.	Motor cycles.	United States and District of Columbia, no fee.	Duplicate number tags procured.	Paid for tags.
	Pleasure.	Trucks.	Pleasure.	Trucks.					
1912.									
July.....	6	5	246	28	3	94	10	11	\$764
August.....	9	13	230	31	1	68	8	16	702
September.....	10	.....	204	20	5	60	5	10	598
October.....	20	1	242	49	1	42	8	8	710
November.....	26	6	202	40	1	36	5	18	622
December.....	14	7	181	24	3	26	5	17	510
1913.									
January.....	17	2	163	14	.....	39	7	9	470
February.....	14	3	189	28	6	39	3	8	560
March.....	4	1	247	25	.....	57	9	18	668
April.....	2	15	308	9	1	86	11	30	842
May.....	10	4	279	18	2	80	11	21	786
June.....	14	7	239	11	1	48	18	12	640
Total.....	146	64	2,730	297	24	675	100	178	7,872

January 16, 1913, the police regulations were amended by adding to the end of section 2, Article XXVI, the following:

"*Provided*, That a nonresident of the District of Columbia shall not be allowed to operate a motor vehicle in the District of Columbia except in every case upon the terms and conditions and payment of fees and further precedent compliance within said District of Columbia of registration of such motor vehicle with the secretary of the automobile board for the time prescribed by the State or Territorial law of the applicant's residence for a resident of the District of Columbia operating a motor vehicle in said State or Territory: *And provided further*, That the law of the District of Columbia and its regulations shall in all other respects apply in all such cases and to all such persons."

Complying with the above-quoted amendment there was paid for "enamel identification number tags" \$1,939.58, the States wherein the motor vehicles were being shown in detail in the table following:

	Con- necticut.	Geor- gia.	In- diana.	Mary- land.	Massa- chu- setts.	New Jersey.	Rhode Is- land.	Texas.	Vir- ginia.	West Vir- ginia.	Total.
February.....				\$203.92					\$12.00		\$215.92
March.....	\$20.00	\$2.00		605.68		\$5.00		\$2.00	24.00		658.68
April.....			\$2.00	188.75			\$15.00		69.00	\$2.50	277.25
May.....				382.65					106.00		488.65
June.....				222.08	\$10.00				67.00		299.08
Total....	20.00	2.00	2.00	1,603.08	10.00	5.00	15.00	2.00	278.00	2.50	1,939.58

*Amount paid for operator's permits in fees by nonresidents and State of their residence.*

	Colo- rado.	Flori- da.	Geor- gia.	Mary- land.	Massa- chu- setts.	North Caro- lina.	New Jersey.	New York.	Penn- syl- vania.	Texas.	Vir- ginia.	Total.
February.....				\$43.00							\$9.00	\$52.00
March.....			\$2.00	139.00				\$5.00	\$2.00	\$2.00	10.00	162.00
April.....				80.00				5.00	2.00		24.00	111.00
May.....	\$2.00			98.00	\$2.00		\$2.00		3.00		24.50	131.50
June.....		\$2.00	2.00	93.00		\$2.00		4.00	2.00		22.50	117.50
Total.....	2.00	2.00	4.00	443.00	2.00	2.00	2.00	14.00	9.00	2.00	90.00	572.00

The amount received in fees for "enamel metal identification number tags" and operator's permits, also increase in the work, is shown in the table below:

Year.	Permits issued.	Fees paid.	Tags issued.	Fees paid.	Nonresidents.	
					Permits.	Tags.
1917-8.....	1,050		2,214	\$2,666		
1908-9.....	1,818		1,684	3,568		
1909-10.....	2,262	\$1,292	2,387	4,752		
1910-11.....	2,262	4,460	2,654	5,314		
1911-12.....	2,593	6,022	4,070	7,848		
1912-13.....	2,737	6,246	4,036	7,872	\$572	\$1,939.58

Because of the changing and switching of the "identification number tags" from vehicle to vehicle, in violation of the regulations and law of Congress, the recommendation for yearly registration of all motor vehicles is renewed.

Very respectfully,

H. M. WOODWARD,

*Secretary Automobile Board, District of Columbia.*

Capt. MARK BROOKE,

*Assistant to Engineer Commissioner, District of Columbia.*

## REPORT OF THE ELECTRICAL ENGINEER.

WASHINGTON, September 8, 1913.

SIR: I have the honor to submit the following report of the operations of the electrical department during the fiscal year ended June 30, 1913:

### IMPROVED INCANDESCENT ELECTRIC LIGHTING.

This form of lighting has been extended on approximately 7 miles of street in place of gas and electric arc lamps. Five hundred and eighty-two 100-candlepower incandescent electric lamps were installed on the following streets: E Street from Seventh to Thirteenth Streets NW.; Fourteenth Street between New York Avenue and Thomas

Circle NW.; Vermont Avenue from Thomas Circle to Iowa Circle NW.; Rhode Island Avenue from Iowa Circle to Connecticut Avenue NW.; I Street between Fourteenth Street and the Avenue of the Presidents NW.; around the United States Capitol Grounds; around the Senate Office Building; around the House Office Building; Delaware Avenue from the Capitol Grounds to the Union Station Plaza; North Capitol Street from B Street to Massachusetts Avenue; Massachusetts Avenue from Union Station Plaza to Stanton Square NE.; Second Street from Massachusetts Avenue to F Street NE.; C Street from North Capitol to First Streets NE.; California Street between Union Station Plaza and Second Street NE.; East Capitol Street from Second to Eleventh Streets; around the Library of Congress; around Lincoln Square; D Street between Delaware Avenue and First Street NE.; E Street between North Capitol Street and the Union Station Plaza NE.; First Street between C Street and the Union Station Plaza NE.; E Street between First Street and the Union Station Plaza NE.

From tests made by the Bureau of Standards, it appears that there is practically no difference in the illuminating value for street lighting purposes of tungsten lamps when placed in the upright or in the pendent position in the center of opalescent globes. All such lamps installed during the past fiscal year have been placed in the upright position.

At the expiration of one year the District of Columbia assumed the maintenance of the entire improved incandescent electric street-lighting system on Seventh Street NW., from Pennsylvania Avenue to New York Avenue, a part of the cost of which had been paid by the merchants on that street from June 6, 1912, to June 30, 1913.

#### ARC LIGHTING.

The appropriation act for the fiscal year 1912 required that all inclosed arc lamps in service on July 1, 1911, be replaced either with 4-ampere magnetite arc lamps or with some other form of improved lighting to be selected by the commissioners, the changes to be made at the rate of not less than 400 lamps per annum, and to be completed by April 1, 1914. In compliance with this act, the following changes have been made:

During the year ended April 1, 1912:	
Changed to 4-ampere magnetite arc lamps.....	201
Replaced by improved form of incandescent electric lighting.....	199
During the year ended April 1, 1913:	
Changed to improved form of incandescent electric lighting.....	134
Ordered changed, work not completed.....	289
Total.....	823

The commissioners are experimenting with a new form of arc lighting which, if satisfactory, will undoubtedly be adopted to replace the 289 inclosed lamps referred to in the above table as ordered changed but not completed. For these 289 lamps the lower rate of \$72.50 each per annum is being paid instead of the higher rate of \$80 each per annum which prevailed prior to April 1, 1913.

#### LIGHTS ALONG STEAM RAILROADS.

The situation with respect to the several suits brought by the District of Columbia against steam railroad companies to compel repayment of sums expended by the District for maintaining lights along the respective rights of way of such companies is as follows:

Judgment in the sum of \$1,042.04 secured against the Washington Terminal Co. for the amount due up to and including September 1, 1909, has been paid, together with costs, and with interest from the above date to February 28, 1913. The total paid was \$1,392.08. A retrial of this case on certain questions of fact is now pending in the Supreme Court of the District of Columbia.

The case of the District of Columbia against the Philadelphia, Baltimore & Washington Railway Co. is still before the Supreme Court of the United States. Should this case be decided against the District, a new suit will be entered under the following provision of the appropriation act for the District for the fiscal year ending June 30, 1914:

"Hereafter, all railroads other than street railroads shall pay to the District of Columbia for the lighting, under the direction and control of the commissioners of the District of Columbia, of the public roads, streets, avenues, and alleys, for their full width, through which their tracks may be laid, for the length of the street occupied by the said tracks, whether the said tracks be laid above, below, or at grade, as well as for the lighting of the subways and bridges over or under which the tracks of said railroads pass; and in default of payment of such bills, actions at law may be main-

tained by the District of Columbia against said railroads or their successors, transferees, or lessees therefor: *Provided*, That nothing herein shall be held to repeal the act of May twenty-sixth, nineteen hundred and eight, relating to the Washington Terminal Company."

The Baltimore & Ohio Railroad Co. and the Georgetown Barge, Dock, Elevator & Railway Co. are continuing to pay for the maintenance of the lamps charged to them.

*Distribution of new lamps established during the fiscal year 1913.*

Kind of light.	North-west.		North-east.		South-west.		South-east.		County.						Total.
									North-west.		North-east.		South-east.		
	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	
Mantle gas.....	14	115	20	20	1	20	28	5	58	38	110	4	28	.....	1 461
Electric arc:															
5-ampere multiple inclosed .....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 4
Electric incandescent:															
100-candlepower.....	237	.....	222	.....	38	.....	111	.....	.....	.....	.....	.....	.....	.....	3 608
80-candlepower.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
60-candlepower.....	13	.....	10	.....	.....	.....	.....	.....	2	.....	.....	.....	24	.....	4 49
40-candlepower.....	6	.....	6	.....	.....	.....	13	.....	91	.....	39	.....	57	.....	5 212
Street-designation lamps:															
On fire-alarm posts—															
Gas.....	3	.....	1	.....	1	.....	5	.....	5	.....	3	.....	.....	.....	15
Electric incandescent.....	3	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	8
Total.....	279	115	261	20	40	20	157	5	161	38	152	4	109	.....	1,361

<sup>1</sup> Of this number 92 naphtha lamps were changed to mantle gas lamps.

<sup>2</sup> These lamps were changed from series inclosed.

<sup>3</sup> Of this number 61 series inclosed arc lamps, 57 multiple inclosed arc lamps, 46 magnetite arc lamps, and 61 gas lamps were changed to 100-candlepower incandescent electric lamps.

<sup>4</sup> Of this number, five 40-candlepower incandescent electric lamps and 20 gas lamps were changed to 60-candlepower incandescent electric lamps.

<sup>5</sup> Of this number 48 naphtha lamps were changed to 40-candlepower incandescent electric lamps.

The changes have been as follows:

Kind of light.	Added.	Discontinued.
Naphtha.....		164
Mantle gas.....	461	93
Electric arc:		
6.6-ampere series inclosed.....		65
5-ampere multiple inclosed.....	4	57
6.6-ampere magnetite.....		2
4-ampere magnetite.....		44
Electric incandescent:		
100-candlepower.....	608	22
80-candlepower.....	1	11
60-candlepower.....	49	3
40-candlepower.....	212	52
Street-designation lamps:		
On fire-alarm posts—		
Gas.....	18	3
Electric incandescent.....	8	1
On patrol posts—		
Gas.....		2
Electric incandescent.....		1
On plain posts—		
Gas.....		20
Electric incandescent.....		1
Total.....	1,361	541

Net increase during the year, 820 lamps.

## SUMMARY OF CHANGES.

Net increase in number of lamps.....	820
Discontinued.....	147
Replaced by other kinds.....	394
Total changes.....	1,361

*Lamps of all kinds in service July 1, 1913, as compared with July 1, 1912.*

Kind of light.	1912	1913
Naphtha.....	164	.....
Mantle gas.....	9,710	10,078
Electric arc:		
6.6-ampere series, inclosed.....	361	296
5-ampere multiple, inclosed.....	431	378
6.6-ampere magnetite.....	2	.....
4-ampere magnetite.....	428	384
Electric incandescent:		
100-candlepower.....	853	1,439
80-candlepower.....	216	206
60-candlepower.....	269	315
40-candlepower.....	2,858	3,018
4-glower Nernst.....	60	60
Street-designation lamps:		
Gas.....	441	434
Electric.....	60	65
Total.....	15,853	16,673

Increase during year, 820 lamps.

## DISTRICT UNDERGROUND CONDUIT AND CABLE SYSTEM.

The following conduit connections were made to the underground system:

*Fire-alarm posts (total, 21).*

Fourteenth Street and Pennsylvania Avenue SE. <sup>1</sup>	Ninth and Allison Streets NW. <sup>1</sup>
Twelfth and G Streets SE.	Twenty-sixth and P Streets NW. <sup>1</sup>
Seventeenth and Gales Streets NE.	Eckington Place and Q Street NE. <sup>1</sup>
Rhode Island Avenue and Summit Place NE.	Seventh and L Streets NE. <sup>1</sup>
Fourteenth and Gallatin Streets NW.	Ninth and C Streets SE. <sup>1</sup>
Georgia Avenue and Rittenhouse Street NW.	Sixth and B Streets SW. <sup>1</sup>
Sixteenth and Fuller Streets NW.	Third and G Streets SE. <sup>1</sup>
Thirty-fifth Street and Volta Place NW. <sup>2</sup>	Connecticut Avenue and Kanawha Street NW.
New Hampshire Avenue and Newton Street NW.	Fifth and Cedar Streets NW.
Thirteenth and E Streets SE. <sup>1</sup>	Piney Branch Road and Butternut Street NW.
	First and Bates Streets NW.

*Patrol posts (total, 19).*

Rhode Island Avenue and Summit Place NE.	Eleventh Street between East Capitol and A Streets NE. <sup>1</sup>
Thirty-first and O Streets NW.	Seventh and F Streets SW. <sup>1</sup>
Twenty-eighth and K Streets NW.	Thirteenth Street and Pennsylvania Avenue SE.
Thirty-fifth Street and Volta Place NW. <sup>1</sup>	New Jersey Avenue and E Street SE.
Thirty-fourth Street and Prospect Avenue NW.	Rhode Island and Mills Avenues NE.
E Street between Thirteenth and Fourteenth Streets SE. <sup>1</sup>	Sixteenth and Euclid Streets NW.
Twenty-seventh and P Streets NW. <sup>1</sup>	Fourteenth Street and Rhode Island Avenue NE.
Eckington Place and Q Street NE. <sup>1</sup>	Connecticut Avenue and Newark Street NW.
Twenty-first and L Streets NW. <sup>1</sup>	Second Street and Virginia Avenue SE.
Sixth and B Streets SW. <sup>1</sup>	

<sup>1</sup> Built by Chesapeake & Potomac Telephone Co. under contract.

<sup>2</sup> Built by H. M. Schreiner under contract.

*Connections to buildings (total, 14).*

Cranch School, Twelfth and G Streets SE.	Takoma Park School, Piney Branch Road and Cedar Street NW.
Buchanan School, E Street between Thirteenth and Fourteenth Streets SE. <sup>1</sup>	Agricultural Department shops and stables, Thirteenth and B Streets NW.
Stevens School, Twenty-first Street between K and L Streets NW. <sup>1</sup>	St. Joseph Orphan Asylum, H Street between Ninth and Tenth Streets NW.
Powell School, School Street between Irving and Lamont Streets NW. <sup>1</sup>	Patterson School, Vermont Avenue near U Street NW.
Giddings School, G Street between Third and Fourth Streets SE. <sup>1</sup>	Washington City Orphan Asylum, Fourteenth and S Streets NW.
Park View School, Warder Place between Newton and Otis Streets NW. <sup>1</sup>	Agricultural Department, Twelfth Street between B and C Streets SW.
Morse School, R Street between New Jersey Avenue and Fifth Street NW.	Bureau of Engraving and Printing, Fourteenth and B Streets SW.

*Connections between conduits (total, 6).*

Fourteenth and K Streets NW.	Third Street between E and G Streets SE. <sup>1</sup>
E Street between Thirteenth and Fourteenth Streets SE., and in alley of square 1043. <sup>1</sup>	First Street and Florida Avenue NW.
Eckington Place and Q Street NE. <sup>1</sup>	Seventeenth Street and Benning Road NE.

In making the above-mentioned connections, 8,241 feet of conduit (duct feet) and 13 manholes were built, the work being done by this department except where noted otherwise.

*Connections to the underground system, July 1, 1913.*

Fire-alarm posts.....	359
Police-patrol posts.....	268
Cable terminal posts.....	7
Schoolhouses.....	62
Fire department houses.....	28
Police station houses.....	12
Miscellaneous District buildings.....	7
United States Government buildings.....	20
Private buildings.....	48
Cable poles.....	85
Total.....	896

<sup>1</sup> Built by Chesapeake & Potomac Telephone Co. under contract.

*Cable installed and withdrawn during the year and amount in service June 30, 1913.*

INSTALLED.

Size of cable.	Signal.		Telephone.				Combination.						Total.		
	Cable.	Conduc-tors, No. 14, Brown & Sharpe.	Conductors.		Cable.	Conductors.				Cable.	Conductors.		No. 14, Brown & Sharpe.	No. 19, Brown & Sharpe.	No. 22, Brown & Sharpe.
			Pair.	No. 19, Brown & Sharpe.		Pair.	No. 14, Brown & Sharpe.	Pair.	Conduc-tors.		No. 19, Brown & Sharpe.				
Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	Fetd.	
150 pair.....			7,941			2,382,300									2,382,300
100 pair.....			2,310			462,000									462,000
50 pair.....			2,114			211,400									211,400
25 pair.....							2,154	15	64,620	25	107,700		64,620		
12 pair.....							2,370	10	47,400	15	71,100		47,400		
6 pair.....															
3 pair.....								6	47,580	6	47,580		47,580		
10 pair.....								5	10,650	5	10,650		10,650		
4 pair.....								4	133,864	4	133,864		133,864		
1 pair.....								3	9,702	2	6,468		9,702		
1 pair.....								2	18,800	1	9,400		18,800		
1 pair.....															
Total.....			14,557			99,050	32,604	.....	332,616	.....	386,762	47,161	332,616	485,812	3,055,700

WITHDRAWN.

	Feet.	Feet.	Feet.	Feet.	No.	Feet.	No.	Feet.	Feet.	Feet.	Feet.
10 pair.....	.....	.....	.....	.....	5	16,450	5	16,450	1,645	16,450	16,450
8 pair.....	.....	.....	.....	.....	4	18,464	4	18,464	2,308	18,464	18,464
5 pair.....	.....	.....	.....	.....	2	10,476	2	10,476	1,746	10,476	6,984
3 pair.....	.....	.....	.....	.....	1	9,228	1	9,228	2,307	9,228	4,614
Total.....	.....	.....	.....	.....	.....	54,618	.....	54,618	8,006	54,618	46,512



IN SERVICE JUNE 30, 1913.

	Feet.	Feet.	Feet.	Feet.	Feet.	No.	Feet.	No.	Feet.	No.	Feet.	Feet.	Feet.	Feet.	Feet.
130 pair.		7,941		2,382,300										7,941	
100 pair.		2,310		462,000										2,310	
100 pair.		10,812												10,812	
90 pair.							480	30	28,800	60					
80 pair.							4,503	30	270,180	50					
75 pair.		4,275													
70 pair.															
65 pair.							1,857	30	111,420	40					
60 pair.							2,785	15	83,550	50					
55 pair.							2,940	30	176,400	40					
50 pair.							11,401	15	342,030	40					
50 pair.		2,114		211,400											
50 pair.	2,533	253,300													
45 pair.							6,069	20	242,760	25					
40 pair.							19,054	15	571,620	30					
40 pair.							7,542	15	226,260	25					
35 pair.							23,767	15	713,010	20					
33 pair.							4,633	17	157,522	16					
30 pair.							5,574	15	17,220	15					
30 pair.	13,019	781,140					63,811	10	276,220	20					
25 pair.							3,413	10	68,260	15					
25 pair.							18,092	10	373,840	10					
18 pair.							5,494	8	87,904	10					
15 pair.							3,000	8	48,000	7					
14 pair.	19,247	577,410					6,424	6	77,088	8					
12 pair.							52,231	6	626,772	6					
10 pair.	12,240	289,056					24,538	5	245,380	5					
10 pair.	11,570						128,111	4	1,024,888	4					
8 pair.							5,654	4	45,232	2					
6 pair.							32,704	4	196,224	2					
5 pair.							115,483	2	461,932	1					
3 pair.															
Total.	47,609	1,912,306	53,261	4,489,760	3,055,700	545,160	.....	.....	7,472,512	.....	10,528,158	651,030	9,384,818	15,017,918	3,055,700

Installed, 8.93 miles of cable containing 733.73 miles of conductor; withdrawn, 1.51 miles of cable containing 19.15 miles of conductor; in service June 30, 1913, 123.30 miles of cable containing 5,200.46 miles of conductor.

Amount of space occupied by cable installed and withdrawn during year and by that in service July 1, 1913.

Owner of space.	Space occupied by cable.			
	Laid without conduit.	Installed during year.	Withdrawn during year.	July 1, 1913.
	<i>Fect.</i>	<i>Fect.</i>	<i>Fect.</i>	<i>Fect.</i>
District of Columbia.....		11,952	712	136,705
Chesapeake & Potomac Telephone Co.....		31,214	6,426	484,000
Washington Ry. & Electric Co. <sup>1</sup> .....		2,859	868	16,521
United States Government.....				1,536
Western Union Telegraph Co.....				7,180
Washington Terminal Co.....				1,019
Submarine Cable.....				150
Placed in parking.....	2,064			2,064
Miscellaneous.....		1,136		1,855
Total.....	2,064	47,161	8,006	651,030

<sup>1</sup>Under this name are included the conduits of all the companies controlled by this corporation.

*Aerial cable installed during the year and amount in service June 30, 1913.*

#### INSTALLED.

Size of cable.	Telephon.		Combination.				Total.			
	Cable.	Conductors No. 19, Brown & Sharpe.	Cable.	Conductors.				Cable.	Conductors.	
				No. 14, Brown & Sharpe.		No. 19, Brown & Sharpe.			No. 14, Brown & Sharpe.	No. 19, Brown & Sharpe.
				Pairs.	Conductors.	Pairs.	Conductors.			
25 pair <sup>1</sup> .....	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i> 10, 130	No. 10	<i>Feet.</i> 202, 600	No. 15	<i>Feet.</i> 303, 900	<i>Feet.</i> 10, 130	<i>Feet.</i> 202, 600	<i>Feet.</i> 303, 900

#### IN SERVICE JUNE 30, 1913.

25 pair.....	1,599	79,950	10, 130	10	202, 600	15	303, 900	11, 729	202, 600	383, 850
20 pair.....			1, 152	10	23, 040	10	23, 040	1, 152	23, 040	23, 040
15 pair.....			8, 525	6	103, 500	9	155, 250	8, 625	103, 500	155, 250
12 pair.....			9, 558	6	114, 696	6	114, 696	9, 558	114, 696	114, 696
10 pair.....			890	5	8, 900	5	8, 900	890	8, 900	8, 900
8 pair.....			852	4	6, 816	4	6, 816	852	6, 816	6, 816
Total.....	1,599	79,950	31, 207	....	459, 552	....	612, 602	32, 806	459, 552	692, 552

<sup>1</sup>This installation was in Nichols Avenue from Good Hope Road to No. 5 Chemical Engine Co., Congress Heights, and replaced 26 open wires.

Installed 1.92 miles of cable containing 95.93 miles of conductor; in service June 30, 1913, 6.21 miles of cable containing 218.20 miles of conductor.

#### FIRE-ALARM SYSTEM.

Twenty new fire-alarm boxes were placed in service during the year, 12 public and 8 private, located as follows:

##### *Public boxes.*

- No. 753, Foxhall Road and Q Street NW.
- No. 774, Connecticut Avenue and Kanawha Street NW.
- No. 858, Sixteenth and Fuller Streets NW.
- No. 884, New Hampshire Avenue and Newton Street NW.
- No. 896, Blair Road and Cedar Street NW.

No. 897, Fifth and Cedar Streets NW.  
 No. 1623, Rhode Island Avenue and Summit Place NE.  
 No. 1628, Seventeenth and Gales Streets NE.  
 No. 1814, Warder Place and Kenyon Street NW.  
 No. 1816, Fourteenth and Gallatin Streets NW.  
 No. 1821, Ninth and Allison Streets NW.  
 No. 898, Georgia Avenue and Rittenhouse Street NW.

*Private boxes.*

No. 491, Bureau of Farm Management, Department of Agriculture, 220 12th Street SW.

No. 492, Bureau of Chemistry, Department of Agriculture, 216 13th Street SW.  
 No. 493, Seed Division, Department of Agriculture, 1304-6 B Street SW.  
 No. 494, Bureau of Plant Industry, Department of Agriculture, 220 14th Street SW.  
 No. 495, West wing of new building, Department of Agriculture.  
 No. 496, East wing of new building, Department of Agriculture.  
 No. 497, Shops and stables, Department of Agriculture, 13th and B Streets NW.  
 No. 1229, Chase's Theater, 15th and G Streets NW.

During the year 17 fire-alarm boxes were changed from overhead to underground connection.

*Fire-alarm boxes in service.*

	July 1, 1912.	July 1, 1913.
Connected by overhead wires:		
Public boxes.....	99	91
Private boxes.....	41	35
Connected by underground wires:		
Public boxes.....	327	347
Private boxes.....	65	79
Total.....	532	552

Each fire-alarm box was tested several times during the year, the contact points cleaned, and the mechanism thoroughly overhauled. This is done regularly once a month as far as possible. The total number of tests amounted to 4,241, being an average of 7.68 per box.

*Alarms received and transmitted:*

Regular box alarms.....	654
Alarms from telephone stations.....	6
Alarms from national automatic boxes.....	0
Local alarms.....	552
Second alarms.....	22
Third alarms.....	0
Fourth alarms.....	0
Fifth alarms.....	0
Sixth alarms.....	0
Total.....	1,234
False box alarms.....	77
False local alarms.....	4

*Alarms received by the month.*

Month.	Box.	Box (false).	Local.	Local (false).
1912.				
July.....	34	3	31	1
August.....	34	2	24	
September.....	46	3	25	
October.....	58	12	40	
November.....	76	6	71	1
December.....	66	5	49	

*Alarms received by the month—Continued.*

Month.	Box.	Box (false).	Local.	Local (false).
1913.				
January.....	67	11	42	.....
February.....	51	3	54	.....
March.....	80	11	70	1
April.....	53	7	52	1
May.....	43	2	51	.....
June.....	52	12	43	.....
Total.....	660	77	552	4

## POLICE PATROL SYSTEM.

The following changes and 21 new installations were made in the patrol system:

*Third precinct.*—New installation, connected underground: Box No. 126, Twenty-eighth and K Streets NW.; box No. 63, Twenty-first and L Streets NW.

*Fourth precinct.*—New installation, connected underground: Box No. 62, Sixth and B Streets SW.; box No. 61, Seventh and F Streets SW.

*Fifth precinct.*—New installation, connected underground: Box No. 55, New Jersey Avenue and E Streets SE.; box No. 62, Thirteenth Street and Pennsylvania Avenue SE. New installation, connected overhead: Box No. 63, Thirteenth and L Streets SE.; box No. 61, Third and M Streets SE. Changed from overhead to underground connection: Box No. 23, E Street between Thirteenth and Fourteenth Streets SE.; box No. 32, Second Street and Virginia Avenue SE.

*Seventh precinct.*—New installation, connected underground; Box No. 123, Thirty-first and O Streets NW. New installation, connected overhead: Box No. 125, Grace Street and Beatty Alley (Georgetown) NW. Changed from overhead to underground connection: Box 35, Thirty-fifth Street and Volta Place NW.; box No. 24, Twenty-seventh and P Streets NW.

*Eighth precinct.*—Changed from overhead to underground connection: Box No. 45, Eckington Place and Q Street NE.

*Ninth precinct.*—New installation, connected underground: Box No. 44, Eleventh Street, between East Capitol Street and Massachusetts Avenue NE.; box No. 122, Fourteenth Street and Rhode Island Avenue NE. New installation, connected overhead: Box No. 142, Bladensburg Road and Hickey Lane NE.; box No. 137, Kenilworth Avenue and Forty-fourth Street NE. Changed from overhead to underground connection: Box No. 51, Rhode Island and Mills Avenues NE.

*Tenth precinct.*—New installation, connected underground: Box No. 134, Rhode Island Avenue and Summit Place NE.; box No. 55, Sixteenth and Euclid Streets NW. Changed from overhead to underground connection: Box No. 12, Sixteenth and Meridian Streets NW.

*Eleventh precinct.*—New installation, connected overhead: Box No. 53, Nichols Avenue entrance to Government Hospital for the Insane SE.; Box No. 54, Thirteenth and W Streets SE.; box No. 55, Livingston Road and Elmira Street SE.; box No. 61, Nichols Avenue and Milwaukee Street SE.

*Subprecinct, Tenleytown.*—New installation, connected underground: Box No. 23, Connecticut Avenue and Newark Street NW.

On July 1, 1913, the distribution of boxes among the precincts was as follows:

Precinct.	Wall boxes.		Booths.	Total.
	Under-ground.	Over-head.		
First.....	30	1	.....	31
Second.....	22	.....	.....	22
Third.....	38	6	.....	44
Fourth.....	21	13	.....	34
Fifth.....	21	12	.....	33
Sixth.....	24	.....	.....	24
Seventh.....	21	4	.....	25
Eighth.....	24	.....	.....	24
Ninth.....	20	20	1	41
Tenth.....	35	10	2	47
Eleventh.....	.....	28	3	31
Subprecinct, Tenleytown.....	9	10	3	22
Total.....	265	104	9	378

## TELEPHONE SYSTEM.

The following 32 telephones were added to the 2 switchboards of the department during the year:

Room 2, District Building, one main, one extension.

Room 323, District Building.

Room 424, District Building, extension.

Rooms 221 and 227, District Building, one main, one extension.

Room 341, District Building, one main, one extension.

Room 102, District Building, extension.

Third police precinct.

Eleventh police precinct.

Seventh police precinct.

Health department stables.

New dog pound.

Office of pound master, extension.

Office of parking commission, extension.

Portable asphalt plant.

Construction department, Potomac Electric Power Co.

Municipal fish wharf and market.

Office of the engineer of bridges, Aqueduct Bridge.

Central High School, extension.

Morse School, extension.

Cranch School, extension.

Manual Training School, one main, one extension.

Park View School.

James Ormond Wilson Normal School, two main, one extension.

Thomson School, extension.

Berrett School, extension.

Peabody School, extension.

The following 36 telephones on these switchboards were discontinued during the year:

Room 305, District Building, extension.

Health department stables.

Old dog pound.

Atypical School, 605 P Street NW.

Atypical School, 625 Q Street NW.

Armstrong School (engine room).

Potomac School.

No. 14 engine house (repairman's room).

Residence of superintendent of machinery.

Residence of assistant superintendent of machinery.

Residence of fire marshal, one main, one extension.

Residence of deputy fire marshal.

Residence of chief engineer, fire department, one main, one extension.

Residence of chauffeur to chief engineer fire department.

Residence of Battalion Chief Proctor, fire department.

Residence of morgue master.

Residence of police surgeon.

Residence of assessor.

Residence of electrical engineer.

Residence of Electrical Inspector Murray.

Residence of chief clerk of the health department.

Residence of Inspector Fowler, Health Department.

Residence of the Assistant Assessor McKenzie.

Residence of Superintendent of Stables Beale, one main, one extension.

Residence of disbursing officer.

Residence of Electrical Inspector Simpson, one main, one extension.

Residence of Foreman Wigginton, electric department.

Residence of Fire-alarm Operator James, electrical department.

Residence of Repairman Bailey, electrical department.

Residence of assistant superintendent of trees and parking.

Residence of Repairman White, electrical department.

Residence of chief clerk, engineer department.

## FRANKLIN SCHOOL SWITCHBOARD.

The following telephone was added and discontinued during the year: Franklin School Building, office of the secretary of the board of examiners of the colored schools.

## POLICE DEPARTMENT SWITCHBOARD.

One telephone (located in the subprecinct station, Tenleytown, D. C.) was added to this switchboard during the year.

The following 16 telephones on this switchboard were discontinued during the year:

Residence of Inspector Gessford, one main, one extension.	Residence of Capt. Hollinberger, one main, one extension.
Residence of Inspector Cross.	Residence of Capt. Doyle, one main, one extension.
Residence of Capt. Mulhall.	Residence of Capt. Dailey.
Residence of Capt. Anderson.	Residence of Capt. Williams.
Residence of Inspector Boardman, one main, one extension.	Residence of Capt. Burns.
Residence of Sanitary Officer Schrouf.	Residence of Capt. Peck.

In the second precinct the system was changed from a two-circuit registering and bridging telephone system to a straight telephone service, each box being connected direct to the precinct station by an independent circuit.

#### WATER DEPARTMENT SWITCHBOARD.

The following 5 telephones were added to this switchboard during the year: Shed, pumping station, Eighteenth Street and Minnesota Avenue SE.; office of the water registrar, room 11, District Building; room 310, District Building, extension; meter room, Bryant Street pumping station; pumping station, Anacostia, extension.

The following telephone was discontinued during the year, residence of Foreman McGuire.

#### *Number of telephones connected to the District system on July 1, 1913.*

Offices in the District Building.....	141
Outside offices and institutions.....	71
Public schools.....	189
Fire department.....	49
Police department, private branch exchange.....	47
Franklin School, private branch exchange.....	20
Water department, private branch exchange.....	40
Police patrol service.....	386
Total.....	943

There are 26 portable telephone sets in service, the property of the District of Columbia. These instruments are used by the fire department and the employees of the electrical department.

#### STORAGE-BATTERY SYSTEM.

The number of cells of storage battery in service July 1, 1913, was as follows:

On fire-alarm circuits.....	1,862
On patrol circuits.....	226
On local circuits.....	86
Total.....	2,174

#### POLES.

Under the authority of the act of Congress approved June 30, 1902, regulating the use of telephone wires in the District of Columbia, the Chesapeake & Potomac Telephone Co., have reported the following amount of work done during the fiscal year:

Poles erected in alleys within the prescribed area:	
Line.....	36
Guy.....	2
Anchors.....	7
	45
Poles erected in alleys outside the prescribed area:	
Line.....	184
Guy.....	9
Anchors.....	24
	217
Poles erected in streets outside the prescribed area:	
Line.....	211
Guy.....	11
Anchors.....	4
	226
Total.....	488

Poles taken down in alleys within the prescribed area:

Line.....	39
Guy.....	9
Anchors.....	7
	55

Poles taken down in alleys outside the prescribed area:

Line.....	26
Guy.....	4
Anchors.....	3
	33

Poles taken down in streets outside the prescribed area:

Line.....	84
Guy.....	13
	97

Total..... 185

Total erected during the year..... 488

Total taken down during the year..... 185

Net increase..... 303

MISCELLANEOUS POLE WORK.

*Poles erected, taken down, moved, etc.*

	Erected.			Taken down.			Moved.		Re-placed.		Reset.		In-crease.		De-crease.	
	Line.	Guy.	Anchor.	Line.	Guy.	Anchor.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.
Chesapeake & Potomac Tele- phone Co.....	431	22	35	149	26	10	84	10	6	20	282	20	.....	.....	4	.....
Potomac Electric Power Co.....	718	23	32	174	3	1	30	1	9	12	544	20	.....	.....	.....	.....
Western Union Telegraph Co.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....
Postal Telegraph-Cable Co.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
District of Columbia.....	.....	.....	.....	142	7	.....	.....	.....	.....	.....	.....	.....	.....	142	7	.....
Capital Traction Co.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
City & Suburban Ry. Co.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	1,153	45	67	468	36	11	114	11	16	12	21	828	20	143	11	.....

*List of poles of all kinds July 1, 1913.*

	Line.	Guy.	Total.
District of Columbia.....	504	15	519
United States Government.....	297	1	298
Chesapeake & Potomac Telephone Co.....	5,817	653	6,470
Potomac Electric Power Co.....	4,894	113	5,007
Western Union Telegraph Co.....	1,069	1	1,070
Postal Telegraph-Cable Co.....	356	8	364
Brightwood Ry. Co.....	340	.....	340
Columbia Ry. Co.....	461	.....	461
Anacostia & Potomac Ry. Co.....	3	.....	3
City & Suburban Ry. Co.....	86	.....	86
Georgetown & Tennytown Ry. Co.....	304	.....	304
Capital Ry. Co.....	208	.....	208
Washington & Baltimore Transit Co.....	30	.....	30
Maryland & Washington Ry. Co.....	158	.....	158
Capital Traction Co.....	202	.....	202
Washington & Glen Echo Ry. Co.....	8	.....	8
Steam railroads.....	573	.....	573
Washington & Great Falls R. R. Co.....	401	.....	401
Total.....	15,711	791	16,502

## ELECTRIC-WIRING INSPECTION.

The following show the amount of work performed by this department in connection with the electrical-wiring inspection:

## Permits issued by the inspector of buildings authorizing electrical wiring:

Buildings.....	1, 056
Machinery.....	144
Signs.....	37
	<hr/> 1, 237

## Permits issued by the electrical department:

For inside electrical work.....	1, 716
For outside electrical work.....	77
Temporary permits.....	315
Without fee (includes permits issued by inspector of buildings).....	1, 377
Quarterly.....	56
Gas lamps outside.....	131
	<hr/> 3, 672

## Certificates issued:

Final.....	3, 310
Without fee.....	102
Preliminary.....	18
Without fee.....	2
	<hr/> 3, 432

## Fees paid to the collector of taxes:

For permits.....	\$2, 295. 00
For certificates.....	3, 167. 00
Miscellaneous.....	18. 00
For 154 copies of Rules and Regulations, at 25 cents each.....	38. 50
For 1 blue print, at 10 cents.....	. 10
	<hr/> 5, 518. 60

## Lamps and apparatus installed:

Incandescent.....	88, 071
Arc lamps.....	31
Miscellaneous.....	4, 963
Blank outlets.....	650
Motors.....	549
Total horsepower of motors.....	1, 851
Generators.....	13
Total kilowatt capacity of generators.....	603
Defective wiring installations repaired, reported by inspectors.....	297
Notices of defective wiring sent.....	1, 142
Request for inspection.....	7
Miscellaneous.....	17
Inspections in connection with yearly license.....	221

*Work of inspectors of electric wiring from July 1, 1912, to June 30, 1913.*

Installations in private premises.....	11, 932
Installations in municipal buildings.....	368
	<hr/> 12, 300
Installations in theaters and motion-picture places:	
Day.....	1, 265
Night.....	655
	<hr/> 1, 920
Total inspections.....	<hr/> 14, 220



MISCELLANEOUS WORK.

This department prepared plans and specifications for and supervised the introduction of electrical installations in the following municipal properties:

Armstrong Manual Training School:

- Clock and bell system.
- Wiring new addition.
- Fixtures.
- Wiring new generator to switchboard.
- Connection of wattmeter-generator circuit.

Western High School:

- Clock and bell system.
- Electric wiring.
- Additional electrical work.
- Electric wires and fixtures.

Eastern High School:

- Electric wiring and fixture for target.
- Electric wiring changes and additions.

Franklin School:

- Additional wiring, north vestibule.
- Additional receptacles.

Cardoza Manual Training School:

- Electric fixtures and lamps.
- Wiring for lights.
- Wiring for motors.

James Ormond Wilson Normal School:

- Fixtures.
- Alterations and additions, electric wiring.
- Stereopticon outlets.
- Clock and bell system.
- Alterations, main switchboard.
- Underground service connection.
- Alterations on stage.

Grover Cleveland School No. 165:

- Extension lighting system.
- Fixtures.
- Stage lighting.
- Motor inspection.

Central High School:

- Additional lighting in basement.
- Wiring for stage and shower-bath rooms.

Business High School, additional wiring.  
Wisconsin Avenue Manual Training School, wiring for power and additional lights.

Phelps School, electric lighting.

Colored Normal School, Georgia Avenue:  
Electric wiring.  
Fixtures.

Langdon School, electric wiring.

M Street High School, wiring gymnasium and drill hall.

School No. 166, Thirtieth and R Streets SE., motor for ventilating system.

School No. 172, O Street, between North Capitol and First Streets NW., electric lighting.

H. D. Cooke School, clock and bell system.

First precinct police station, changes in wiring.

Third precinct police station, additions and alterations in wiring.

Fourth precinct police station:

- Electric lighting system.
- Changes in lighting system.
- Wiring for garage.

Sixth precinct police station:

- Electric lighting system.
- Changes in electrical equipment.
- Wiring for garage.

Seventh precinct police station, wiring for garage.

Eighth precinct police station, wiring for garage.

Tennallytown substation, repairs to lighting system.

No. 2 chemical engine, lighting system trouble.

No. 3 chemical engine, fixtures for trip circuit.

No. 5 chemical engine, wiring for trip circuit.

No. 21 engine house, 9 truck, repairs to lighting system.

No. 7 truck house, repairs to lighting system.

Fire department stables, wiring for lights.

Street cleaning stables NW.:

- Electric lighting system.
- Rearrangement.

Street cleaning stables SE., motor installation.

Property yards, shop, Canal Street, electric wiring for power.

District of Columbia Jail, trouble, lighting system.

Parking commission shop, reservation 13:  
Wiring for light and power.

- Reported trouble, motor rheostat.

Health department, pound and stable:

- Electric lighting system.
- Additional wiring, switch loop.
- Lighting trouble.

Water department, Eighteenth Street and Minnesota Avenue SE., lighting system.

Union Station Plaza, fountain pump, motor installation.

Eastern Market, lighting trouble.

Georgetown Market, electric wiring.

Home for the Aged, Blue Plains, electric wiring.

Public Library, lighting extension.

District of Columbia Workhouse, Occoquan, light and power.

## STATEMENT OF RECEIPTS AND EXPENDITURES.

## LIGHTING.

*Receipts.*

Appropriation .....	\$386,000.00	
Repayments by Baltimore & Ohio R. R. Co.....	332.78	
Repayments by Washington Terminal Co.....	<sup>1</sup> 3,806.45	
Repayments by Georgetown Barge, Dock, Elevator & R. R. Co.....	520.88	
Repayments by Philadelphia, Baltimore & Washington R. R. Co.....	<sup>1</sup> 1,978.26	
Repayments by Seventh Street merchants.....	878.93	
Repayments by Massachusetts Avenue Heights Syndicate .....	1,504.76	
Miscellaneous repayments.....	44.34	
Total.....		395,066.40

*Expenditures.*

Mantle gas lighting:		
Washington Gas Light Co.....	\$160,720.45	
Deductions for defective service.....	21.31	
		160,699.14
Georgetown Gas Light Co.....	10,302.20	
Deduction for defective service.....	12.12	
		10,290.08
Mantle naphtha lighting:		
American Street Lighting Co.....	55.03	
Deduction for defective service.....	.22	
		54.81
Incandescent electric lighting:		
Potomac Electric Power Co.....	92,849.41	
Deduction for defective service.....	166.30	
		92,683.11
Arc lighting:		
Potomac Electric Power Co.....	85,851.46	
Deduction for defective service.....	247.00	
		85,604.46
Street designation lighting:		
Washington Gas Light Co.....	4,124.41	
Deduction for defective service.....	.32	
		4,124.09
Street designation lighting:		
Georgetown Gas Light Co.....	242.81	
Deduction for defective service.....	.22	
		242.59
Street designation lighting:		
Potomac Electric Power Co.....	623.39	
Deduction for defective service.....	1.05	
		622.34
Lamp-posts, lanterns, globes, etc .....		23,173.02
Paints, oils, etc.....		102.76
Travel expense.....		187.97
Labor pay roll.....		2,138.39
Street signs, material, etc.....		2,614.56
Erecting, moving, and taking down posts.....		1,402.20
Office expense.....		125.02
Tools and hardware.....		30.05
Repairs to pavements.....		86.04
Cartage.....		49.85
Models.....		183.00
Patterns and repairs to same.....		1,117.67
Stable expense.....		239.04
Rent of storerooms.....		1,077.74
Freight and express.....		42.84

<sup>1</sup> Due, but not paid.

Testing instruments.....	\$74. 30
Tree trimming.....	30. 00
Electric current and gas.....	11. 73
Livery and hire.....	1, 596. 00
Care and maintenance of horses and vehicles, engineer stables.....	500. 00
Miscellaneous.....	25. 37
Total.....	389, 128. 17

GENERAL SUPPLIES.

*Receipts.*

Appropriation.....	\$13, 500. 00
Repayments.....	429. 21
Total.....	13, 929. 21

*Expenditures.*

Telephone rental, purchase and service.....	4, 475. 24
Livery.....	2, 940. 00
Cable.....	1, 960. 00
Office expense.....	1, 233. 33
Wire.....	808. 95
Instruments and apparatus.....	531. 71
Labor pay roll.....	564. 75
Stable expense.....	518. 70
Castings.....	287. 50
Batteries and battery supplies.....	132. 06
Line supplies.....	98. 41
Conduit supplies.....	90. 86
Car tickets.....	60. 00
Tools and hardware.....	41. 63
Pole supplies.....	25. 50
Repairs to pavements.....	1. 65
Electric current and gas.....	32. 26
Ice.....	3. 68
Miscellaneous.....	4. 80
Total.....	13, 811. 03

EXTENSION OF TELEPHONE SYSTEM, PUBLIC SCHOOLS.

*Receipts.*

Appropriation.....	\$1, 400. 00
Repayments.....	7. 35
Total.....	1, 407. 35

*Expenditures.*

Cable and conduit.....	872. 30
Conduit construction.....	208. 00
Labor pay roll.....	221. 26
Maintenance of horses and vehicles, engineer stables.....	63. 40
Total.....	1, 364. 96

EXTENSION OF POLICE-PATROL SYSTEM.

RECEIPTS.

Appropriation.....	\$3, 000. 00
Repayments.....	19. 18
Total.....	3, 019. 18

## ELECTRIC-WIRING INSPECTION.

The following show the amount of work performed by this department in connection with the electrical-wiring inspection:

<b>Permits issued by the inspector of buildings authorizing electrical wiring:</b>	
Buildings.....	1, 056
Machinery.....	144
Signs.....	37
	<hr/> 1, 237

**Permits issued by the electrical department:**

For inside electrical work.....	1, 716
For outside electrical work.....	77
Temporary permits.....	315
Without fee (includes permits issued by inspector of buildings).....	1, 377
Quarterly.....	56
Gas lamps outside.....	131
	<hr/> 3, 672

**Certificates issued:**

Final.....	3, 310
Without fee.....	102
Preliminary.....	18
Without fee.....	2
	<hr/> 3, 432

**Fees paid to the collector of taxes:**

For permits.....	\$2, 295. 00
For certificates.....	3, 167. 00
Miscellaneous.....	18. 00
For 154 copies of Rules and Regulations, at 25 cents each.....	38. 50
For 1 blue print, at 10 cents.....	. 10
	<hr/> 5, 518. 60

**Lamps and apparatus installed:**

Incandescent.....	88, 071
Arc lamps.....	31
Miscellaneous.....	4, 963
Blank outlets.....	650
Motors.....	549
Total horsepower of motors.....	1, 851
Generators.....	13
Total kilowatt capacity of generators.....	603
Defective wiring installations repaired, reported by inspectors.....	297
Notices of defective wiring sent.....	1, 142
Request for inspection.....	7
Miscellaneous.....	17
Inspections in connection with yearly license.....	221

*Work of inspectors of electric wiring from July 1, 1912, to June 30, 1913.*

Installations in private premises.....	11, 932
Installations in municipal buildings.....	368
	<hr/> 12, 300
<b>Installations in theaters and motion-picture places:</b>	
Day.....	1, 265
Night.....	655
	<hr/> 1, 920
Total inspections.....	<hr/> 14, 220

## MISCELLANEOUS WORK.

This department prepared plans and specifications for and supervised the introduction of electrical installations in the following municipal properties:

**Armstrong Manual Training School:**

- Clock and bell system.
- Wiring new addition.
- Fixtures.
- Wiring new generator to switchboard.
- Connection of wattmeter-generator circuit.

**Western High School:**

- Clock and bell system.
- Electric wiring.
- Additional electrical work.
- Electric wires and fixtures.

**Eastern High School:**

- Electric wiring and fixture for target.
- Electric wiring changes and additions.

**Franklin School:**

- Additional wiring, north vestibule.
- Additional receptacles.

**Cardoza Manual Training School:**

- Electric fixtures and lamps.
- Wiring for lights.
- Wiring for motors.

**James Ormond Wilson Normal School:**

- Fixtures.
- Alterations and additions, electric wiring.
- Stereopticon outlets.
- Clock and bell system.
- Alterations, main switchboard.
- Underground service connection.
- Alterations on stage.

**Grover Cleveland School No. 165:**

- Extension lighting system.
- Fixtures.
- Stage lighting.
- Motor inspection.

**Central High School:**

- Additional lighting in basement.
- Wiring for stage and shower-bath rooms.

**Business High School, additional wiring.****Wisconsin Avenue Manual Training School, wiring for power and additional lights.****Phelps School, electric lighting.****Colored Normal School, Georgia Avenue:**

- Electric wiring.
- Fixtures.

**Langdon School, electric wiring.****M Street High School, wiring gymnasium and drill hall.****School No. 166, Thirtieth and R Streets SE., motor for ventilating system.****School No. 172, O Street, between North Capitol and First Streets NW., electric lighting.****H. D. Cooke School, clock and bell system.****First precinct police station, changes in wiring.****Third precinct police station, additions and alterations in wiring.****Fourth precinct police station:**

- Electric lighting system.
- Changes in lighting system.
- Wiring for garage.

**Sixth precinct police station:**

- Electric lighting system.
- Changes in electrical equipment.
- Wiring for garage.

**Seventh precinct police station, wiring for garage.****Eighth precinct police station, wiring for garage.****Tennallytown substation, repairs to lighting system.****No. 2 chemical engine, lighting system trouble.****No. 3 chemical engine, fixtures for trip circuit.****No. 5 chemical engine, wiring for trip circuit.****No. 21 engine house, 9 truck, repairs to lighting system.****No. 7 truck house, repairs to lighting system.****Fire department stables, wiring for lights.****Street cleaning stables NW.:**

- Electric lighting system.
- Rearrangement.

**Street cleaning stables SE., motor installation.****Property yards, shop, Canal Street, electric wiring for power.****District of Columbia Jail, trouble, lighting system.****Parking commission shop, reservation 13:**

- Wiring for light and power.
- Reported trouble, motor rheostat.

**Health department, pound and stable:**

- Electric lighting system.
- Additional wiring, switch loop.
- Lighting trouble.

**Water department, Eighteenth Street and Minnesota Avenue SE., lighting system.****Union Station Plaza, fountain pump, motor installation.****Eastern Market, lighting trouble.****Georgetown Market, electric wiring.****Home for the Aged, Blue Plains, electric wiring.****Public Library, lighting extension.****District of Columbia Workhouse, Occoquan, light and power.**

## STATEMENT OF RECEIPTS AND EXPENDITURES.

## LIGHTING.

*Receipts.*

Appropriation .....	\$386,000.00
Repayments by Baltimore & Ohio R. R. Co.....	332.78
Repayments by Washington Terminal Co.....	<sup>1</sup> 3,806.45
Repayments by Georgetown Barge, Dock, Elevator & R. R. Co.....	520.88
Repayments by Philadelphia, Baltimore & Washington R. R. Co.....	<sup>1</sup> 1,978.26
Repayments by Seventh Street merchants.....	878.93
Repayments by Massachusetts Avenue Heights Syndicate.....	1,504.76
Miscellaneous repayments.....	44.34
Total.....	<u>395,066.40</u>

*Expenditures.*

Mantle gas lighting:		
Washington Gas Light Co.....	\$160,720.45	
Deductions for defective service.....	21.31	
		160,699.14
Georgetown Gas Light Co.....	10,302.20	
Deduction for defective service.....	12.12	
		10,290.08
Mantle naphtha lighting:		
American Street Lighting Co.....	55.03	
Deduction for defective service.....	.22	
		54.81
Incandescent electric lighting:		
Potomac Electric Power Co.....	92,849.41	
Deduction for defective service.....	166.30	
		92,683.11
Arc lighting:		
Potomac Electric Power Co.....	85,851.46	
Deduction for defective service.....	247.00	
		85,604.46
Street designation lighting:		
Washington Gas Light Co.....	4,124.41	
Deduction for defective service.....	.32	
		4,124.09
Street designation lighting:		
Georgetown Gas Light Co.....	242.81	
Deduction for defective service.....	.22	
		242.59
Street designation lighting:		
Potomac Electric Power Co.....	623.39	
Deduction for defective service.....	1.05	
		622.34
Lamp-posts, lanterns, globes, etc .....		23,173.02
Paints, oils, etc.....		102.76
Travel expense.....		187.97
Labor pay roll.....		2,138.39
Street signs, material, etc.....		2,614.56
Erecting, moving, and taking down posts.....		1,402.20
Office expense.....		125.02
Tools and hardware.....		30.05
Repairs to pavements.....		86.04
Cartage.....		49.85
Models.....		183.00
Patterns and repairs to same.....		1,117.67
Stable expense.....		239.04
Rent of storerooms.....		1,077.74
Freight and express.....		42.84

<sup>1</sup> Due, but not paid.

Testing instruments.....	\$74.30
Tree trimming.....	30.00
Electric current and gas.....	11.73
Livery and hire.....	1,596.00
Care and maintenance of horses and vehicles, engineer stables.....	500.00
Miscellaneous.....	25.37
Total.....	389,128.17

GENERAL SUPPLIES.

*Receipts.*

Appropriation.....	\$13,500.00
Repayments.....	429.21
Total.....	13,929.21

*Expenditures.*

Telephone rental, purchase and service.....	4,475.24
Livery.....	2,940.00
Cable.....	1,960.00
Office expense.....	1,233.33
Wire.....	808.95
Instruments and apparatus.....	531.71
Labor pay roll.....	564.75
Stable expense.....	518.70
Castings.....	287.50
Batteries and battery supplies.....	132.06
Line supplies.....	98.41
Conduit supplies.....	90.86
Car tickets.....	60.00
Tools and hardware.....	41.63
Pole supplies.....	25.50
Repairs to pavements.....	1.65
Electric current and gas.....	32.26
Ice.....	3.68
Miscellaneous.....	4.80
Total.....	13,811.03

EXTENSION OF TELEPHONE SYSTEM, PUBLIC SCHOOLS.

*Receipts.*

Appropriation.....	\$1,400.00
Repayments.....	7.35
Total.....	1,407.35

*Expenditures.*

Cable and conduit.....	872.30
Conduit construction.....	208.00
Labor pay roll.....	221.26
Maintenance of horses and vehicles, engineer stables.....	63.40
Total.....	1,364.96

EXTENSION OF POLICE-PATROL SYSTEM.

RECEIPTS.

Appropriation.....	\$3,000.00
Repayments.....	19.18
Total.....	3,019.18

*Expenditures.*

Conduit construction.....	\$844. 40
Conduit supplies.....	106. 36
Cable.....	662. 91
Repairs to pavements.....	299. 91
Wire.....	334. 09
Posts.....	108. 75
Cast-iron patrol-box shells.....	126. 18
Instruments and apparatus.....	164. 50
Line supplies.....	60. 66
Tools and hardware.....	9. 73
Labor pay roll.....	93. 00
Care and maintenance of horses and wagons, engineer stables.....	189. 98
<b>Total.....</b>	<b>3, 000. 47</b>

## WIRES UNDERGROUND.

*Receipts.*

Appropriation.....	\$7, 000. 00
Repayments.....	315. 47
<b>Total.....</b>	<b>7, 315. 47</b>

*Expenditures.*

Conduit construction.....	2, 279. 80
Conduit supplies.....	450. 36
Cable.....	2, 616. 40
Repairs to pavements.....	1, 134. 95
Posts, etc.....	263. 50
Cable reel.....	10. 00
Care and maintenance of horses and wagons, engineer stables.....	300. 00
Labor pay roll.....	239. 01
<b>Total.....</b>	<b>7, 294. 02</b>

## PURCHASE AND ERECTION OF FIRE-ALARM BOXES.

*Receipts.*

Appropriation.....	\$2, 000. 00
Repayments.....	7. 35
<b>Total.....</b>	<b>2, 007. 35</b>

*Expenditures.*

Fire-alarm boxes.....	1, 250. 00
Labor pay roll.....	13. 77
Lamp posts, etc.....	134. 30
Conduit construction.....	185. 00
Conduit supplies.....	69. 83
Line supplies.....	50. 00
Cable.....	238. 00
Repairs to pavements.....	31. 16
<b>Total.....</b>	<b>1, 972. 06</b>

## MOTOR VEHICLE.

*Receipts.*

Appropriation.....	\$1, 500. 00
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*Expenditures.*

One auto delivery wagon.....	1, 250. 00
Tires and inner tubes.....	74. 63
Repairs to tires and inner tubes.....	7. 00



Repairs to vehicles.....	\$42. 98
Gasoline.....	77. 00
Oil and grease.....	33. 05
Extra equipment.....	9. 50
Miscellaneous.....	. 85
Total.....	1, 495. 01

ADDITIONAL CABLE.

*Receipts.*

Appropriation.....	\$4, 000. 00
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*Expenditures.*

Cable.....	3, 854. 11
Wire, etc.....	92. 59
Pay roll.....	52. 50
Total.....	3, 999. 20

Respectfully submitted.

WALTER C. ALLEN,  
*Electrical Engineer.*

Capt. J. L. SCHLEY,  
*Corps of Engineers, United States Army,  
Assistant to the Engineer Commissioner.*

REPORT OF THE CHIEF CLERK OF THE ENGINEER DEPARTMENT.

WASHINGTON, D. C., October 9, 1913.

SIR: I have the honor to submit the following report of the operations of this office for the fiscal year ended June 30, 1913:

Communications received, briefed, recorded, and indexed.....	14, 061
Vouchers prepared.....	346
Letters sent.....	7, 042
Contracts drawn and indexed.....	257
Bonds approved and recorded.....	546

The tables accompanying this report show—

1. The expenditures from general appropriations for forage, horses, wagons, carts, etc.
2. Schedule of proposals received during the year.
3. Statement of contracts entered into during the year.

Very respectfully,

DANIEL E. GARGES,  
*Chief Clerk, Engineer Department.*

Lieut. Col. CHESTER HARDING,  
*Corps of Engineers, United States Army,  
Engineer Commissioner, District of Columbia.*

*Statement of expenditures from general appropriations for forage, horses, wagons, carts, etc., fiscal year 1913.*

Assessment and permit work, streets.....	\$649. 39
Northwest schedule.....	96. 00
Southwest schedule.....	19. 00
Southeast schedule.....	67. 00
Northeast schedule.....	49. 00
Georgetown schedule.....	10. 00
G Street, Pennsylvania Avenue to Fourteenth street.....	128. 00
Alley, square 1043.....	55. 00
Sidewalks and curbs.....	48. 00
Repairs, suburban roads.....	124. 00
Construction and repair of bridges.....	118. 00
Q Street Bridge.....	309. 00
Pave B Street and Virginia Avenue.....	24. 00

Repairs to streets.....	\$1,517.78
Construction county roads and suburban streets.....	1,267.00
Repairs, engine houses.....	152.95
Repairs to schools.....	1,033.23
Fire protection.....	269.10
Repairs, police stations.....	55.75
Public schools, telephone system.....	63.40
Wires, underground.....	300.00
Extension police patrol.....	189.98
Lighting.....	500.00
Cleaning and repairing sewers and basins.....	5,595.31
Main and pipe sewers.....	962.91
Suburban sewers.....	1,932.02
Assessment and permit work, sewers.....	1,975.34
General expenses, water department.....	2,081.60
High service, water department.....	6,766.73
Parking commission.....	2,658.60
Construction of school buildings.....	145.97
Plumbing.....	106.16
Total.....	29,270.22

## SCHEDULE OF PROPOSALS RECEIVED DURING FISCAL YEAR 1912-13.

[Star (\*) indicates accepted proposal.]

*Laying cement sidewalks in the District of Columbia.*

[Opened July 5, 1912.]

Bidders.	Class A (per square yard).	Class B (per square yard).
Cranford Paving Co.....	\$1.03	\$1.18
Harper & Voigt.....	1.01½	1.20
The Warren F. Brenizer Co.*.....	.96	1.20

*The construction of Rock Creek main ~~interceptor~~, section No. 3, northward from Connecticut Avenue.*

[Opened July 8, 1912.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified- brick masonry (per cubic yard).	Sewer-brick masonry (per cubic yard).
The W. F. Brenizer Co.*.....	\$0.75	\$8.50	\$23.00	\$14.00
Geo. Hyman.....	.30	12.75	21.00	14.00

*Paving streets and avenues with sheet asphalt and bituminous macadam.*

[Opened July 12, 1912.]

Bidders.	Laying standard asphalt pave- ment (per square yard).		Laying vitrified block (per square yard).	Laying bituminous macadam pavement, 6-inch base (per square yard).	Laying bituminous macadam pavement, broken- stone base (per square yard).
	a.	b.			
Newton Paving Co.....	\$1.90	\$1.79½	\$1.48	\$1.73	\$1.12
Cranford Paving Co.*.....	1.77	1.73	1.37	1.67	.99
The Barber Asphalt Paving Co.....	1.79	.....	1.33	1.75	1.05

*Laying 2-inch asphalt block pavement with 6-inch concrete base (per square yard).*

[Opened July 12, 1912.]

Washington Asphalt Block & Tile Co.\*..... 1.76

*Grading portions of lots 4, 5, and 6, north of the alley. in square 1043 (per cubic yard).*

[Opened July 22, 1912.]

James W. Bean\*..... \$0.38  
 Harper & Voigt..... .95  
 R. E. Boiseau..... .95  
 George Hyman..... .74  
 G. B. Mullin..... .52½

*Grading and improving suburban streets and avenues.*

[Opened July 29, 1912.]

Bidders.	Grading (per cubic yard).	Setting 6 by 20 inch granite or bluestone curb (per linear foot).	Setting 8 by 8 inch granite curb (per linear foot).	Paving or repaving cobble or granite block gutters (per square yard).	Paving vitrified block gutters on gravel base (per square yard).
George B. Mullin.....	\$0.43	\$0.27	\$0.38½	\$0.36	\$0.60
Lyons Bros. ....	.45	.35	.40	.40	.70
E. G. Gummel.....	.40	.35	.39	.39	.60
Harper & Voigt¹.....	.39	.30	.35	.43	.79
The Cranford Paving Co.².....	.50	.27	.39		

Bidders.	Cement curb (per linear foot).	18-inch cement gutter (per linear foot).	24-inch cement gutter (per linear foot).	Cement concrete base (per square yard).	Furnishing and haul- ing bank gravel (per cubic yard).
George B. Mullin.....	\$0.47	\$0.37	\$0.47	\$0.87	\$1.25
Lyons Bros. ....	.70	.50	.68	.90	1.25
E. G. Gummel.....	.55	.40	.60	1.00	.75
Harper & Voigt¹.....	.50	.29	.40	.97	.49
The Cranford Paving Co. ².....	.49	.35	.44	.84	

¹ Contract awarded streets without concrete base.  
 ² Contract awarded streets with concrete base.

*Grading the Gallinger Playground located at Nineteenth and E Streets NW.*

[Opened July 29, 1912.]

M. F. McNamara..... \$400  
 I. H. Fisher \*..... 260  
 Harper & Voigt Co..... 342  
 Baltimore Stone Co..... 395  
 R. E. Boiseau..... 435

*Excavating site for swimming pool on the Rosedale Playground, Seventeenth and Kramer Streets NE. (price of job complete).*

[Opened July 29, 1912.]

M. F. McNamara..... \$360  
 Baltimore Stone Co..... 320  
 I. H. Fisher..... 240

*Grading certain streets in the District of Columbia.*

[Opened July 31, 1912.]

Bidders.	14th St. NE., Newton to Jackson St. (per cubic yard).	34th St., Macomb to Newack St. NW. (per cubic yard).	Tilden St. NW. (per cubic yard). <sup>(1)</sup>	23d St., Naylor Road to R St., and Naylor Road to 22d St. SE. (per cubic yard).	Fessenden St., Wisconsin Ave. to River Road NW. (per cubic yard).
Lyons Bros.....			\$0.60	\$0.36	
Geo. B. Mullin.....	*\$0.43	*\$0.34	.57	.28	*\$0.23
Warren F. Brenizer Co.....	.50		.70	.40	
Harper & Voigt.....	.68	.47	.54	*.27½	.24½
Geo. Hyman.....	.49	.47	.64	.34	.29

Bidders.	18th St., Newton to Irving St. NW. (per cubic yard).	Monroe St., 15th to 17th St. NE. (per cubic yard).	17th St., Hamlin St. to Rhode Island Ave. NE. (per cubic yard).	Minnesota Ave., Pennsylvania Ave. to 28th St. SE. (per cubic yard).
Lyons Bros.....				\$0.37
Geo. B. Mullin.....	*\$0.24	\$0.53	*\$0.23	*.28
Warren F. Brenizer Co.....		.50	.45	.40
Harper & Voigt.....	.63	.55	.55	.41
Geo. Hyman.....	.45	*.30	.28	.32

<sup>1</sup> All bids rejected.*Erecting concrete swimming pool at the Rosedale Playground.*

[Opened Aug. 5, 1912.]

Bidders.	Furnish all labor and material, construct pool.	Furnish all labor, construct pool.	Furnish all labor and material, construct sidewalk between pool and shelter house.	Furnish all labor and material, construct sidewalk around pool and to shelter house.
M. F. McNamara.....	\$900.00	\$450.00	\$216.00	1 \$108.00
R. J. Beall Construction Co.....	\$22.47		19.49	172.86

<sup>1</sup> Mr. McNamara has added to Proposal No. 4, for constructing sidewalk around pool and to shelter house, the words "material to be furnished by District of Columbia."*Grading Cedar Street, Takoma Park, D. C.*

[Opened Aug. 5, 1912.]

	Sq. yd.
Geo. Hyman.....	\$0.42
George B. Mullin*.....	.33½
G. Raeder, H. Ludgate, and J. Fitzgerald.....	.56
Wm. F. Cush.....	.55

*Moving two portable school buildings, now located on the site of the normal school building at Eleventh and Harvard Streets, NW.*

[Opened Aug. 6, 1912.]

Bidders.	Alternate A.	Alternate B.	Alternate C.	Alternate D.
Merchants Transfer & Storage Co**.....		\$79		\$74
Littlefield, Alvord & Co.....	\$850	147	\$850	147
C. L. Sears & Son.....	800		900	

*Extending steel stack, McKinley Manual Training School (job complete).*

[Opened Aug. 12, 1912.]

J. E. Hurley\*..... \$250

*Hauling one portable school building from the grounds of the Orr School, Twining City, D. C., to the grounds of the Congress Heights School.*

[Opened Aug. 12, 1912.]

Bidders.	Job complete.	Time.
Merchants Transfer & Storage Co.*.....	\$57	2 days.
Littlefield, Alvord & Co.....	150	Do.

*Installing a steam-heating system in the John W. Ross School building.*

[Opened Aug. 14, 1912.]

York Engineering Co.\*..... \$2,200.00  
W. G. Cornell Co..... 2,359.90*Constructing the Michigan Avenue trunk sewer, section 1, between Sargent Road and Eleventh Place.*

[Opened Aug. 15, 1912.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry "D" (per cubic yard).	Sewer-brick masonry (per cubic yard).
The Warren F. Brenizer Co.*.....	\$0.50	\$8.30	\$14.00
Geo. Hyman.....	1.85	9.50	14.00

*Constructing cinder running track at the Cardoza playground, located at First and I Streets SW.*

[Opened Aug. 15, 1912.]

Bidders.	Proposal A.	Proposal B.
Baltimore Stone Co.....	\$595.60	\$484.00
I. H. Fisher*.....	475.00	460.00
R. E. Boiseau.....	617.00	1487.00
R. J. Beall Construction Co.....	742.50	642.50

<sup>1</sup> If excavated material to be hauled away from site, add 30 cents cubic yard.*Constructing cinder track at the Gallinger playground, located at Nineteenth and E Streets NW.*

[Opened Aug. 15, 1912.]

Bidders.	Proposal A.	Proposal B.
Baltimore Stone Co.....	\$365.22	\$320.22
I. H. Fisher*.....	275.00	260.00
R. E. Boiseau.....	312.00	262.00
R. J. Beall Construction Co.....	333.33	300.00

*Constructing a passageway between the John W. Ross School and the James Ormond Wilson Normal School, Harvard Street NW., between Eleventh and Thirteenth Streets.*

[Opened Aug. 16, 1912.]

Baltimore Stone Co..... \$3,112  
Geo. E. Wyne\*..... 3,000

*Surfacing the Gallinger playground, located at Nineteenth and E Streets.*

[Opened Aug. 20, 1912.]

Bidders.	Proposal A.	Proposal B.
I. H. Fisher *.....	<sup>1</sup> \$125.00	\$100.00
R. J. Beall Construction Co. ....	<sup>2</sup> 532.80	507.30

<sup>1</sup> With horse roller for \$100.

<sup>2</sup> Using horse roller instead of steam roller.

*Constructing walks, steps, etc., Western High School, Thirty-fifth and R Streets NW.*

[Opened Aug. 27, 1912.]

Bidders.	Job complete.	Time.
Wm. Rothwell & Son.....	\$636	30 days.
R. J. Beall Construction Co.*.....	484	Do.
R. E. Boiseau.....	578	Do.

*Construction of piling and timber foundation for the Anacostia trunk sewer to the established bulkhead line, Anacostia River improvement.*

[Opened Sept. 16, 1912.]

Bidders.	Proposal 1.	Proposal 2.
Thomas Banks *.....	\$0.18½	\$58.77
Clarke & Winston Co. (Inc.) .....	.20	65.00

*Making alterations in the windows of the Public Library.*

[Opened Sept. 18, 1912.]

Bidders.	Price.	Time.
W. H. Childs.....	\$199.00	30 days.
B. B. Knell *.....	125.00	8 days.
L. Bosworth.....	493.95	30 days.
Jos. H. Gibbons.....	150.00	10 days.

*Retubing boiler No. 2, at the District Jail.*

[Opened Sept. 24, 1912.]

Bidders.	Price.	Time.
J. E. Hurley *.....	\$148.00	5 weeks.
G. W. Forsberg.....	159.00	20 days.
Webber & Thomas.....	260.00	( <sup>1</sup> )

<sup>1</sup> Ten days after arrival of tube and 15 days to set tube.

*The construction of outlet trunk sewer, Stickfoot Branch drainage, to the established bulk-head line, Anacostia River improvement.*

[Opened Oct. 1, 1912.]

Bidders.	Concrete invert ma- sonry "B" (per cubic yard).	Concrete arch ma- sonry "B" (per cubic yard).	Vitrified brick ma- sonry (per cubic yard).	Sewer brick masonry (per cubic yard).
Geo. Hyman.....	\$7.25	\$7.25	\$25.00	\$14.00
The Warren F. Brenizer Co.....	8.50	8.00	21.00	14.00
E. G. Gummel *.....	7.00	7.00	22.00	13.00

*Conduit and wiring system for motors at the Cardozo Manual Training School, First and I Streets SW.*

[Opened Oct. 8, 1912.]

Bidders.	Job complete.	Time of completion.
Robert Smith, trading as Capital Electric Co.* .....	\$159.00	30 per cent wire used, 5 weeks; commercial used, 3 weeks.
Carroll Electric Co.....	230.00	
National Electrical Supply Co.....	231.00	

*Doing certain work on playgrounds.*

[Opened Oct. 21, 1912.]

Bidders.	Laying 100 square yards, more or less, of 24-inch cobble gutter (per square yard).	Laying 100 square yards, more or less, of 24-inch cement gutter (per square yard).	Laying 100 linear feet, more or less, of 6- inch terra- cotta sewer pipe (per linear foot).
I. H. Fisher*.....	\$1.50	\$1.50	\$0.35
R. J. Beall Construction Co.....	1.50	1.50	1.50

\* Excludes any sewer work outside of grounds.

*Furnishing and installing a gas engine at the James Rodman West School, and a gasoline engine and tank at the Randle Highlands School.*

[Opened Oct. 31, 1912.]

Bidders.	Engine, West School.	Engine, Randle Highlands School.	Deposit.	Time.
Backus Water Motor Co.*.....	\$425.00	\$465.00	None.	30 days.
District Machine Works:			\$100.00	Do.
Vertical.....	502.50	502.50		
Horizontal.....	447.50	447.50		
National Electrical Supply Co:			100.00	Do.
Vertical.....	507.00	507.00		
Horizontal.....	517.00	517.00		

*Construction of sewers in the vicinity of Park Place NW.*

[Opened Nov. 1, 1912.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry "E" (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).
Geo. Hyman.....	\$1.25	\$8.00	\$20.00	\$14.00
The Warren F. Brenizer Co.*.....	1.10	7.50	21.00	14.00

*Construction of sewers in the vicinity of Brookland, D. C.*

[Opened Nov. 1, 1912.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry.	12-inch diameter pipe sewer (per linear foot).	10-inch diameter pipe sewer (per linear foot).
Geo. Hyman.....	\$0.75	\$13.00	\$0.65	\$0.55
The Warren F. Brenizer Co.*.....	.65	14.00	.70	.60

*Installing wire guards at old District of Columbia Workhouse (job complete).*

[Opened Nov. 5, 1912.]

Soper & McDonald*.....	\$345.00
Fred S. Gichner.....	424.60
Washington Stair & Ornamental Iron Works.....	448.00

*Furnishing and installing steel rolling doors or horizontal folding doors at the street-cleaning department stable.*

[Opened Nov. 7, 1912.]

Bidders.	Steel doors.	Steel-frame transoms.	Time.
James G. Wilson Manufacturing Co.*.....	\$1,284.00	\$528.00	45 days.
The Kinnear Manufacturing Co.....	1,230.00		

*Hauling portable school, located on premises at Twenty-eighth and Olive Streets NW., to the grounds of the Petworth School Building.*

[Opened Nov. 12, 1912.]

Bidders.	Job complete.	Time.
Merchants' Transfer & Storage Co.....	\$50.00	1 day.
Littlefield, Alvord & Co.*.....	47.50	

*Superficial grading, cement surface work and coping, wire fencing, cinder surface work, soiling, and sodding at the O Street Manual Training School, O Street NW.*

[Opened Nov. 20, 1912.]

Bidders.	Job complete.	Alternate A.	Time.
The R. J. Beall Construction Co.....	\$1,732.00		23 working days.
Benj. B. Knell.....	1,333.00	\$314.00	
Joseph H. Gibbons.*.....	1,297.00	300.00	
Wm. Rothwell & Son.....	1,771.00	423.00	30 working days.



*Furnishing and installing combination and electric fixtures in the Cardozo Manual Training School, No. 168, First and I Streets SW.*

[Opened Nov. 27, 1912.]

Bidders.	Job complete.	Fixtures delivered at repairshop.	Time.
C. A. Muddiman & Co.....	\$228.00	\$205.00	35 working days.
The Elmer H. Catlin Co.....	351.30	.....	20 working days.
O. R. Evans & Bro. *.....	237.80	.....	30 working days.

*Furnishing and installing steel doors at west end of corridor on first floor at the James Ormond Wilson Normal School Building.*

[Opened Dec. 4, 1912.]

Bidders.	Job complete.	Time.
Dietrich Bros.....	\$172.00	3 weeks.
Chesapeake Iron Works.....	250.00	6 weeks.
Bruno Bros. & Co.*.....	70.00	30 days.
J. C. Brandstedt.....	220.00	3 weeks.

*Constructing Normal School Building No. 169, to be erected on lots 6 to 10, inclusive, and lot 817, on Georgia Avenue, and lots 17 to 21, inclusive, on Sixth Street NW., square 3060, Washington, D. C.*

[Opened Dec. 6, 1912.]

Bidders.	Job complete.	Alternate—				
		A.	B.	C.	D.	E.
H. J. Montgomery.....	\$227,900.00	—\$32,220.00	—\$3,100.00	—\$9,600.00	—\$3,000.00	.....
P. F. Gormley Co.....	222,786.95	— 22,471.90	— 4,429.00	—10,061.75	+ 5,194.00	.....
Arthur Cowdill.....	214,680.00	— 23,400.00	— 6,100.00	—11,390.00	— 2,400.00	—\$400.00
Melton Construction Co.....	207,800.00	— 24,820.00	— 2,700.00	—10,269.00	.....	.....
Jas. L. Parsons.....	202,000.00	— 20,000.00	— 5,000.00	— 6,000.00	.....	.....
Geo. E. Wyne*.....	206,900.00	— 21,600.00	— 4,000.00	—10,200.00	— 1,300.00	.....
Wise Granite Co.....	221,000.00	— 23,400.00	— 3,300.00	— 8,600.00	— 1,800.00	— 200.00
Davis Construction Co.....	217,233.00	— 21,700.00	— 3,650.00	— 7,800.00	.....	.....
E. G. Heflin.....	225,559.00	— 27,500.00	— 5,520.00	— 7,260.00	.....	.....
Connors Bros. Co.....	214,379.00	— 22,800.00	— 4,000.00	— 7,986.00	— 3,239.00	+ 943.00
The Norcross Bros. Co.....	249,600.00	— 24,000.00	— 5,000.00	—10,600.00	— 3,300.00	— 600.00

Bidders.	Alternate—					
	F.	G.	H.	I.	K.	L.
H. J. Montgomery.....	.....	.....	.....	.....	.....	.....
P. F. Gormley Co.....	—\$191.00	— \$163.00	— \$798.00	.....	— \$500.00	—\$1,924.00
Arthur Cowdill.....	— 65.00	— 1,800.00	— 175.00	—\$50.00	— 600.00	— 2,540.00
Melton Construction Co.....	— 150.00	— 1,200.00	— 760.00	.....	— 800.00	— 1,400.00
Jas. L. Parsons.....	— 100.00	— 250.00	— 200.00	.....	— 500.00	— 1,750.00
Geo. E. Wyne*.....	— 200.00	— 750.00	— 800.00	.....	— 550.00	— 2,500.00
Wise Granite Co.....	— 150.00	— 250.00	—1,500.00	.....	— 300.00	— 2,400.00
Davis Construction Co.....	.....	— 400.00	— 377.00	.....	.....	— 2,100.00
E. G. Heflin.....	.....	.....	— 785.00	.....	—1,296.00	— 1,924.00
Connors Bros. Co.....	— 24.00	— 50.00	—1,200.00	+600.00	— 700.00	— 1,980.00
The Norcross Bros. Co.....	— 40.00	—1,700.00	— 900.00	+250.00	.....	— 2,600.00

Constructing Normal School Building No. 169, to be erected on lots 6 to 10, inclusive, and lot 817, on Georgia Avenue, and lots 17 to 21, inclusive, on Sixth Street NW., square 3060, Washington, D. C.—Continued.

Bidders.	Alternate—					
	M.	N.	O.	P.	Q.	R.
H. J. Montgomery.....	— \$700.00	— \$588.00	—	— \$800.00	— 2½c.	—
P. F. Gormley Co.....	—1,031.00	— 586.00	—\$2,459.00	— 681.00	— 2½c.	—\$441.00
Arthur Cowsill.....	— 100.00	— 520.00	— 2,750.00	—1,260.00	—2.87c.	— 280.00
Melton Construction Co.....	— 750.00	— 800.00	— 1,400.00	— 900.00	— 2.4c.	— 700.00
Jas. L. Parsons.....	— 500.00	— 800.00	— 2,000.00	— 400.00	— 2c.	— 750.00
Geo. E. Wyne*.....	—1,160.00	—1,100.00	— 1,900.00	— 750.00	— 2½c.	— 700.00
Wise Granite Co.....	—1,100.00	— 600.00	— 2,200.00	— 850.00	— 4c.	— 450.00
Davis Construction Co.....	— 850.00	— 676.00	— 2,600.00	— 750.00	— 2.4c.	— 680.00
E. G. Heflin.....	—1,148.00	—1,691.00	— 1,300.00	—1,250.00	— 2.4c.	— 618.00
Connors Bros. Co.....	—1,197.00	— 1,488.00	— 1,150.00	— 150.00	— 2c.	— 460.00
The Norcross Bros. Co.....	—1,000.00	— 500.00	— 4,400.00	— 850.00	— 2.5c.	— 700.00

Bidders.	Alternate—					
	S.	T.	U.	V.	W.	X.
H. J. Montgomery.....	—\$210.00	—	—	—	—	+ <sup>1</sup> \$671.00
P. F. Gormley Co.....	— 112.50	—\$150.00	—	—\$190.00	+ \$1,600.00	+ <sup>1</sup> \$1,097.00
Arthur Cowsill.....	— 100.00	— 560.00	—\$104.00	— 265.00	+ 210.00	+ 700.00
Melton Construction Co.....	— 210.00	—	— 140.00	— 200.00	+ 1,800.00	+ 1,600.00
Jas. L. Parsons.....	— 50.00	— 200.00	— 80.00	— 150.00	+ 2,000.00	+ 1,000.00
Geo. E. Wyne*.....	— 200.00	—	— 136.00	— 200.00	+ 1,550.00	+ 900.00
Wise Granite Co.....	— 800.00	— 250.00	— 80.00	— 300.00	+ 1,600.00	+ 900.00
Davis Construction Co.....	— 200.00	—	—	—	+ 1,800.00	+ 1,600.00
E. G. Heflin.....	—	—	— 240.00	— 235.00	+ 1,600.00	+ 1,647.00
Connors Bros. Co.....	— 114.00	— 250.00	+ 65.00	— 130.00	+ 1,568.00	+ 1,216.00
The Norcross Bros. Co.....	— 100.00	— 400.00	+ 80.00	— 155.00	+ 1,700.00	+ 2,200.00

Bidders.	Alternate Y.				Alternate Z.	Alternate A.A.
	4" letter.		14" letter.			
	Bronze.	Cast iron.	Bronze.	Cast iron.		
H. J. Montgomery					—\$9,400.00	— \$528.00
P. F. Gormley Co	+ \$84.00	+ \$52.50	+ \$126.00	+ \$84.00	—11,500.00	—1,632.00
Arthur Cowsill	+ <sup>s</sup> 1.50	+ 1.25	+ 3.50	+ 3.25	—11,500.00	—2,700.00
Melton Construction Co	+ 18.00	+ 26.00	+ 32.00	+ 48.00	— 9,000.00	—2,000.00
Jas. L. Parsons	+ <sup>s</sup> 2.00	+ .75	+ 4.00	+ 2.50	— 7,000.00	—2,700.00
Geo. E. Wyne*	+ <sup>s</sup> 2.00	+ 1.50	+ 5.00	+ 3.50	— 45.50	—2,700.00
Wise Granite Co.	+ <sup>s</sup> 1.75	+ .75	+ 4.00	+ 1.50	— 7,000.00	—2,700.00
Davis Construction Co					— 7,000.00	—2,900.00
E. G. Heflin					—11,500.00	— 528.00
Connors Bros. Co.	+ 38.00	+ 50.00	+ 88.00	+125.00	—12,400.00	—2,700.00
The Norcross Bros. Co.	+ 55.00	+ 55.00	+ 120.00	+ 95.00	—10,000.00	—2,700.00

<sup>1</sup> No. 4.<sup>2</sup> No. 2.<sup>3</sup> Each.<sup>4</sup> Per M.

NOTE.—Wyne's accepted proposal included Alternates B, C, D, F, H, L, M, N, O, P, R, S, U, V, Z, AA.

Boiler breeching to be furnished and installed at the Central High School, No. 43, Seventh and O Streets NW.

[Opened Dec. 10, 1912.]

Bidders.	Job complete.
J. C. Brandstedt.....	\$394.00
J. E. Hurley*.....	235.00

*Construction of sewer in Military Road between Broad Branch Road and Connecticut Avenue.*

[Opened Dec. 18, 1912.]

Bidders.	Ordinary excavation.	Sewer brick masonry laid.	15-inch diameter pipe sewer laid.
Geo. Hyman*.....	\$0. 59	\$12. 00	\$0. 70
Lyons Bros.....	. 79	15. 00	. 85
W. F. Brenizer Co.....	. 70	14. 00	. 65

*Construction of sewers in valley of Broad Branch, District of Columbia.*

[Opened Dec. 18, 1912.]

Bidders.	Ordinary excavation.	Sewer brick masonry laid.	15-inch diameter pipe sewer laid.
Geo. Hyman.....	\$0. 90	\$14. 00	\$0. 75
W. F. Brenizer Co.*.....	. 48	14. 00	. 65

*Construction of sewer in Military Road between Rock Creek Park and Piney Branch Road.*

[Opened Dec. 18, 1912.]

Bidders.	Ordinary excavation.	Sewer brick masonry laid.	15-inch diameter pipe sewer laid.
Geo. Hyman.....	\$0. 54	\$12. 00	\$0. 65
The Cranford Paving Co.....	. 90	18. 00	. 83
Lyons Bros.....	. 80	15. 00	. 90
W. F. Brenizer Co.*.....	. 48	14. 00	. 65

*Constructing sheds on lots 4, 5, and 6, square 1043, G Street SE., between Thirteenth and Fourteenth Streets.*

[Opened Dec. 23, 1912.]

Bidders.	Work complete (sections A, B, C, D).	Each additional section 30 feet wide.	Each additional section 15 feet wide.	Time.
Wm. Rothwell & Son.....	\$5, 685. 00	\$526. 00	\$361. 50	65 working days. 60 days. 90 days.
Skinker & Garrett.....	1, 160. 00	460. 00	364. 00	
W. H. McCray.....	5, 247. 00	430. 00	256. 00	
H. J. Montgomery.....	990. 56	471. 14	337. 24	
Burgess & Parsons.....	780. 00	600. 00	450. 00	
W. E. Mooney*.....	1, 019. 00	553. 00	306. 00	

*Constructing pump house and lodge on the southeast corner of Eighteenth Street and Minnesota Avenue, Anacostia, D. C.*

[Opened Dec. 30, 1912.]

Bidders.	Job complete.	Alternate A.	Alternate B.
Wm. Rothwell & Son.....	\$11,896	\$658	\$972
Arthur L. Smith & Co.....	11,994	891	1,184
W. H. McCray.....	12,837	700	900
W. E. Mooney*.....	11,189	576	770
Burgess & Parsons.....	11,900	1,080	870
Arthur M. Poynton.....	12,100	700	950
Skinker & Garrett.....	12,245	830	1,070
H. J. Montgomery.....	12,131	550	700

*Construction of steel stack and breeching and forge connections and wire window guards at the Cardozo Manual Training School, First and I Streets SW.*

[Opened Jan. 3, 1913.]

Bidders.	For constructing stack, breeching, etc.	For wire window guards.
J. E. Hurley*.....	\$230.00	\$34.00
Bruno Bros. & Co.....	250.00	52.00

*Installing electric signal bell system in the John Eaton and Henry D. Cooke Schools.*

[Opened Jan. 4, 1913.]

Bidders.	Henry D. Cooke School.	John Eaton School.
National Electrical Supply Co*.....	\$99.00	\$76.00
Thomas J. Williams.....	96.35	.....

*Constructing sheds on lots 4, 5, and 6, square 1043, G Street SE., between Thirteenth and Fourteenth Streets for work complete.*

[Opened Jan. 10, 1913.]

Skinker & Garrett.....	\$4,604.00
W. E. Mooney*.....	4,588.00
Wm. Rothwell & Son.....	4,994.00
H. J. Montgomery.....	4,728.30
W. H. McCray.....	4,950.00

*Grading Tilden Street and filling Deane Avenue and Grant Street.*

[Opened Jan. 27, 1913.]

Bidders.	Tilden Street NW., grading (per cubic yard.)	Tilden Street NW., crushing and delivering stone (per cubic yard).		Deane Avenue and Grant Street NE., filling (per cubic yard).	
		Proposition No. 1. <sup>1</sup>	Proposition No. 2. <sup>1</sup>	Proposition No. 1. <sup>2</sup>	Proposition No. 2. <sup>4</sup>
Harper & Voigt.....	\$0.61	.....	.....	.....	.....
Geo. Hyman.....	.65	.....	.....	\$0.60	.....
Whiting-Turner Construction Co.....	.90	.....	.....	.....	.....
Geo. B. Mullin.....	*.435	*\$0.69	.....	.44	.....
Wm. F. Cush.....	.56	.78	\$0.90	.....	.....

NOTE.—All bids rejected on Deane Avenue and Grant Street.

<sup>1</sup> If contract for grading is awarded to us.

<sup>2</sup> If contract for grading is awarded to other parties.

<sup>3</sup> Filling from public space.

<sup>4</sup> Filling supplied by bidder.

*Furnishing and installing conduits, wires, fixtures, fittings, lamps, and glassware for an electric-lighting system, extensions to dining room and ward building, Home for the Aged and Infirm (work complete).*

[Opened Jan. 28, 1913.]

Robert Smith, Capital Electrical Co.....	\$475
National Electrical Supply Co.....	460
Skinker & Garrett.....	450
W. E. Mooney.....	525
H. J. Montgomery.....	525

NOTE.—All bids rejected.

*Constructing an extension of the colored men's ward and of dining room, Home for the Aged and Infirm.*

[Opened Jan. 28, 1913.]

Bidders.	Price, complete.	Alternate—								
		A.	B.	C.	D.	E.	F.	G.	H.	I.
Samuel P. Harbin <sup>1</sup> .....	\$23,033.00	—\$225	—\$352	+\$1,000.00	+\$200	—\$100	+\$200	—\$130	+\$145	+\$310
W. H. McCray <sup>2</sup> .....	22,000.00	— 200	— 60	+ 1,100.00	+ 150	— 150	+ 250	— 125	+ 140	+ 190
Skinker & Garrett.....	19,367.00	— 100	— 100	+ 525.00	+ 50	— 100	+ 135	— 178	+ 400	+ 236
W. E. Mooney.....	22,738.00	— 639	— 524	+ 992.00	+ 147	— 50	+ 145	— 105	+ 100	+ 115
H. J. Montgomery.....	21,507.35	— 338	— 200	+ 618.00	+ 171	— 200	+ 300	— 175	.....	+ 215
McKay & Morris <sup>2</sup> .....	20,831.00	— 200	— 122	+ 636.48	+ 100	— 300	+ 175	— 200	+ 100	+ 175
Burgess & Parsons.....	23,000.00	— 550	— 450	+ 180.00	+ 250	— 160	+ 200	— 110	+ 250	+ 270

NOTE.—All bids rejected.

<sup>1</sup> Does not include electrical work.

<sup>2</sup> Bid includes electrical work.

<sup>3</sup> No bid on electrical work.

*Doing plumbing work in the psycopathic ward, Washington Asylum (old almshouse building).*

[Opened Feb. 1, 1913.]

Bidders.	Price, complete.	Item A.		Item B.	
		Nurses' bath-rooms.	Time (working days).	Inmates' toilet rooms.	Time (working days).
Ed. J. Hannan.....	\$1,321.00	\$425.00	.....	\$896.00	60
Foley & Curtin.....	1,282.50	445.00	40	837.50	60
Maurice J. Colbert.....	1,173.00	376.00	40	797.00	40
William Rothwell & Son.....	1,190.00	394.00	40	796.00	45
Covert, Hanes & White*.....	1,135.00	355.00	20	827.00	30

*Collection and disposal of night soil in the District of Columbia.*

[Opened Feb. 3, 1913.]

Warner Stutler:*	Per annum
Price from July 1, 1913, to June 30, 1915.....	\$15,900
Price from July 1, 1913, to June 30, 1918.....	15,000

*Filling on Deane Avenue and Grant Street NE.*

[Opened Feb. 14, 1913.]

Bidders.	Filling from public space (per cubic yard).	Filling to be supplied by bidders (per cubic yard).
J. B. Latimer.....	\$0.50	\$0.60

NOTE.—Bid rejected.

*Building and hauling troop privies.*

[Opened Feb. 15, 1913.]

	Each.
Allan T. Howison.....	\$17.76
Skinker & Garrett.....	19.00
W. E. Mooney *.....	17.00

*Building toilet stations.*

[Opened Feb. 15, 1913.]

	Each.
W. E. Mooney.....	\$281.00
Skinker & Garrett *.....	250.00
Allan T. Howison.....	276.41

*Erection of fire escapes at the Armstrong Manual Training School.*

[Opened Feb. 21, 1913.]

The Alexandria Iron Works.....	\$218.00
Soper & McDonald *.....	212.00

*Installing heating and ventilating system, Normal School No. 169, located on Georgia Avenue, Howard Place, and Fairmont Street NW.*

[Opened Feb. 21, 1913.]

Bidder.	Price complete.	Item.								
		No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.
W. G. Cornell Co....	\$24,719	\$24,719	-\$1,800	-\$500	-\$1,525	.....	-\$264	-\$1,350	.....	-\$1,300
Crook-Kries & Co....		27,646	- 2,200	- 600	- 850	-\$1,500	- 345	- 1,100	-\$350	+ 1,200
Standard Engineering Co.....		22,850	- 1,810	- 450	- 1,145	- 375	- 440	- 1,300	+ 600	- 330
The Biggs Heating Co.....		24,887	- 1,896	- 610	- 1,348	+ 132	- 390	- 1,160	+ 272	+ 359
Walters, Parks & Melton.....		33,000	- 2,500	- 950	- 1,400	.....	- 150	- 1,100	- 180	.....
York Engineering Co.*.....		22,011	- 1,375	- 409	- 1,786	+ 1,350	- 980	- 1,299	.....	- 510

*Construction of a concrete culvert in Eighteenth Street NE., between Monroe and Newton Streets.*

[Opened Feb. 26, 1913.]

Bidders.	Concrete masonry E (per cubic yard).	Vitrified brick masonry (per cubic yard).	Grading (per cubic yard).
Jos. J. Caylor.....	\$9.50	\$18.00	\$0.95
R. J. Beall Construction Co.....	8.00	25.00	.584
Harper & Voigt Co.....	9.00	25.00	.75
R. E. Boiseau.....	12.00	23.00	1.25
E. G. Gummel*.....	6.15	20.00	.50

*Grading Deane Avenue and Grant Street.*

[Opened Mar. 10, 1913.]

Bidders.	Filling from public space (per cubic yard).	Filling supplied by bidder (per cubic yard).
E. G. Gummel.....	\$0.47	\$0.47
The Warren F. Brenizer Co.....	.40	
Martin Dodge*.....	.39	

*Construction of section 4, Rock Creek main interceptor sewer, in the National Zoological Park.*

[Opened Mar. 17, 1913.]

Bidders.	Section A—Sewer in open cut.				Section B—Sewer in tunnel.	
	Excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).	Excavation (per linear foot).	Masonry (per linear foot).
Geo. Hyman.....	\$3.00	\$3.00	\$20.00	\$15.00	\$18.00	\$10.00
E. G. Gummel.....	1.50	10.00	23.00	16.00	12.00	8.50
Warren F. Brenizer Co.*.....	.75	8.00	22.00	14.00	12.00	6.25
The Whiting-Turner Construction Co.....	2.00	8.25	22.00	15.00	25.00	6.60
W. H. & C. F. Thompson.....	1.50	7.00	20.00	16.00	17.50	6.00
Ryan & Reilly Co.....	1.00	9.00	20.00	15.00	18.00	7.75

*Construction of section 2, Anacostia main interceptor, Monroe Street to Thirteenth Street SE.*

[Opened Mar. 17, 1913.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).	6-inch sub-drain pipe (per linear foot).
Warren F. Brenizer Co.*.....	\$1.75	\$8.00	\$22.00	\$14.00	\$0.30
The Baltimore Engineering Co.....	2.00	12.40	26.00	26.00	.50
W. H. & C. F. Thompson.....	3.50	8.00	20.00	16.00	.50

*Construction of section 3, Anacostia main interceptor, Thirteenth Street to Pennsylvania Avenue Bridge.*

[Opened Mar. 17, 1913.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).	6-inch sub-drain pipe (per linear foot).
E. G. Gummel.....	\$1.80	\$8.50	\$25.00	\$17.00	\$0.20
Geo. Hyman.....	1.20	8.50	20.00	14.00	.30
The Baltimore Engineering Co.....	1.90	12.40	26.00	26.00	.50
The Whiting-Turner Construction Co.....	1.58	8.25	22.00	15.00	.30
The Warren F. Brenizer Co.*.....	.89	7.75	21.00	14.00	.30
W. H. & C. F. Thompson.....	1.35	8.00	20.00	16.00	.50

*Making repairs to asphalt pavements.*

[Opened Mar. 25, 1913.]

Bidders.	Laying standard asphalt pavement (2½ inches asphalt surface, 2-inch binder before compression, with 6-inch concrete base (per square yard)).		Laying standard asphalt surface, 2½ inches before compression (per square yard).		Laying asphalt binder (in connection with resurfacing work) (per cubic foot).		Laying standard asphalt surface (for repairs and miscellaneous work, cuts, etc.) (per cubic foot).		Laying asphalt binder for miscellaneous work (per cubic foot).		Laying standard asphalt surface for space to be repaired for street railways (per cubic foot).		Laying asphalt binder, street railway space (per cubic foot).	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Newton Paving Co.....	\$1.79	\$1.79	\$0.87	\$0.87	\$0.33	\$0.31	\$0.63	\$0.61	\$0.47	\$0.45	\$0.63	\$0.61	\$0.47	\$0.45
The Cranford Paving Co.*.....	1.73	1.68	.66	.62	.27	.26	.51	.45	.40	.38	.58	.50	.45	.43

*Constructing an extension of the colored men's ward and of dining room, Home for the Aged and Infirm.*

[Opened Mar. 25, 1913.]

Bidders.	Job complete, not including electrical work.	Electrical work, complete.
Burgess & Parsons.....	\$21,900	.....
Skinker & Garrett*.....	20,337	<sup>1</sup> \$450
H. J. Montgomery.....	21,500	<sup>1</sup> 500
W. E. Mooney, Evans building.....	21,399	<sup>1</sup> 403
W. H. McCray.....	<sup>2</sup> 22,800	.....
McKay & Morris.....	21,222	444

<sup>1</sup> Will not accept electrical work unless given contract for addition.<sup>2</sup> Includes electrical work.*Construction of Fillmore trunk sewer to the established bulkhead line, Anacostia River improvement.*

[Opened Apr. 1, 1913.]

Bidders.	Piling in place (per linear foot).	Lumber in place (per 1,000 feet b. m.).	Ordinary excavation, etc. (per cubic yard).	Concrete invert masonry "B" (per cubic yard).	Concrete arch masonry "B" (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).
Geo. Hyman*.....	\$0.17 <sup>1</sup>	\$45.00	\$1.50	\$6.50	\$26.50	\$20.00	\$14.00
E. G. Gummel.....	.23	55.00	1.00	7.85	7.85	22.00	14.00
Warren F. Brenizer.....	.20	50.00	1.25	6.40	6.40	20.00	14.00

*Replacing water-closet in cellar at No. 9, Second Street NE. (job complete).*

[Opened Apr. 18, 1913.]

Coberth, Hanes & White\*..... <sup>1</sup> \$35.00<sup>1</sup> Or \$25 if carpenter work is omitted.*Trapping and venting sink at 1109 Twenty-first Street NW.*

[Opened Apr. 18, 1913.]

Coberth, Hanes &amp; White\*..... \$22.00

*Constructing stairway at the Business High School.*

[Opened Apr. 19, 1913.]

Bidders.	Job complete.	Time.
A. F. Jorss.....	\$550	5 weeks.
Benj. B. Knell.....	532	
Soper & McDonald.....	427	30 days.
The Alexandria Iron Works*.....	485	4 weeks.
Fred S. Gichner.....	1,480	6 weeks.

*Doing plumbing work at the street cleaning department stables.*

[Opened Apr. 28, 1913.]

Maurice J. Colbert\*..... \$76.00  
 S. S. Shedd & Bro. Co..... 118.00  
 Coberth, Hanes & White Co..... 88.00



*Construction of sections 5 and 6, Piney Branch trunk sewer, Fourteenth Street to Decatur Street.*

[Opened May 7, 1913.]

Bidders.	Ordinary excavation (per cubic yard).		Concrete masonry B (per cubic yard).		Vitrified brick masonry (per cubic yard).		Sewer brick masonry (per cubic yard).	
	Section 5.	Section 6.	Section 5.	Section 6.	Section 5.	Section 6.	Section 5.	Section 6.
Whiting-Turner Construction Co.....	\$0.61½	\$0.61½	\$9.00	\$9.00	\$22.00	\$22.00	\$15.00	\$15.00
E. G. Gummel.....	.30	.30	8.00	8.00	22.00	22.00	14.00	14.00
Warren F. Brenizer.....	.40	.40	7.00	7.00	21.00	21.00	14.00	14.00
R. J. Malone.....	.90	.90	9.00	9.00	22.00	22.00	16.00	16.00
Geo. Hyman *.....	.30	.30	6.65	6.65	20.00	20.00	14.00	14.00

*Construction of sections 1 and 2, Maryland Avenue trunk sewer, Fifteenth Street to Seventh Street.*

[Opened May 7, 1913.]

Bidders.	Ordinary excavation (per cubic yard).		Concrete masonry B (per cubic yard).		Vitrified brick masonry (per cubic yard).		Sewer brick masonry (per cubic yard).	
	Section 1.	Section 2.	Section 1.	Section 2.	Section 1.	Section 2.	Section 1.	Section 2.
Whiting-Turner Construction Co.....	\$1.70	\$1.70	\$7.90	\$7.90	\$22.00	\$22.00	\$15.00	\$15.00
W. F. Brenizer Co.....	.67	.67	6.75	6.75	21.00	21.00	14.00	14.00
Geo. Hyman *.....	.64	.64	7.00	7.00	19.00	19.00	12.00	12.00
R. J. Malone.....	1.00	1.00	8.30	8.30	21.00	21.00	15.00	15.00
E. G. Gummel.....	.82	.82	5.66	5.66	22.00	22.00	14.00	14.00

*Construction of substructure, Poplar Point substation.*

[Opened May 7, 1913.]

Bidders.	Ordinary excavation, etc. (per cubic yard).	Concrete masonry B in place (per cubic yard).
Warren F. Brenizer.....	\$2.50	\$8.50
Whiting-Turner Construction Co.....	1.58	7.70
E. G. Gummel *.....	1.50	7.25

*Furnishing and installing slate steps at the Grant School (job complete).*

[Opened May 9, 1913.]

Wm. Seely Hutchinson.....	\$158.00
American Mosaic Co.....	105.00
The W. E. Thompson Co.....	107.00
Edwin E. Ellett.....	124.50
National Mosaic Co. *.....	98.00

*Collection and disposal of ashes and refuse from buildings under the control of the Commissioners of the District of Columbia.*

[Opened May 15, 1913.]

Bidders.	2 years (per cubic yard).	5 years (per cubic yard).
Warner Stutler.....	\$0.44	\$0.42
Thomas Regan.....	.44½	.44½
James W. Bean *.....	.41	.49
L. M. Johnston.....	.47	.49

*Furnishing and installing slate treads at the Jefferson School (job complete).*

[Opened May 16, 1913.]

American Mosaic Co.*	\$275.00
National Mosaic Co.	523.00
Wm. Beely Hutchinson	356.00
The W. E. Thompson Co.	156.00
Edwin E. Ellett	309.00

*Excavating and concrete masonry in connection with constructing bridges across Watts Branch, in the vicinity of Deane Avenue and Grant Street NE.*

[Opened May 20, 1913.]

Bidders.	Excavation (per cubic yard).	Concrete masonry (per cubic yard).
Chas. H. Tompkins*	\$0.40	\$6.00
William F. Cush	.80	9.75
Martin Dodge	.35	7.50
The Warren F. Brenizer Co.	.50	9.00

*Laying 2-inch asphalt-block pavement with 6-inch concrete base (per square yard).*

[Opened May 26, 1913.]

The Washington Asphalt Block & Tile Co.*	\$1.79
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*Paving streets and avenues with sheet asphalt and bituminous concrete.*

[Opened May 26, 1913.]

Bidders.	Laying standard asphalt pavement (2½-inch surface, 2-inch binder, before compression), with 6-inch concrete base (per square yard).		Laying vitrified block, with 6-inch concrete base (per square yard of block).	Laying bituminous concrete pavement on 6-inch concrete base (per square yard).	Laying bituminous concrete pavement on broken stone base (per square yard).
	(a) Using pitch lake asphalt.	(b) Using any asphalt conforming to specifications.			
Eastern Paving Co.		\$1.76	\$1.36	\$1.66	\$0.97
Cranford Paving Co.*	\$1.77	1.69	1.37	1.64	.97

*Retubing boiler at the Force School.*

[Opened May 27, 1913.]

Crook-Kries & Co.	\$203.00
Webber & Thomas	128.00
G. W. Forsberg*	111.00
J. E. Hurley	121.94
H. F. Boswell	122.16

*Retubing boiler at the Stevens School.*

[Opened May 27, 1913.]

Crook-Kries & Co.	\$203.00
G. W. Forsberg*	111.00
Webber & Thomas	128.00
J. E. Hurley	131.94
H. F. Boswell	122.16

*Grading and improving suburban streets and avenues.*

[Opened May 29, 1913.]

Bidders.	Grading (per cubic yard).	Setting 6 by 20 inch granite or blue- stone curb (per linear foot).	Setting 8 by 8 inch granite curb (per linear foot).	Paving or re- paving cobble or granite block gutters (per square yard).	Paving vitri- fied block gutters on gravel base (per square yard).	Con- struct- ing cement curb (per linear foot).	Con- struct- ing 18-inch cement gutter (per linear foot).	Con- struct- ing 24-inch cement gutter (per linear foot).	Con- struct- ing cement con- crete base (per square yard).	Furn- ish- ing and haul- ing bank gravel.
Harper & Voigt *...	\$0.39	\$0.35	\$0.39	\$0.39	\$0.69	\$0.52	\$0.31	\$0.42	\$0.94	\$1.25
E. G. Gummel *...	.35	.29	.37	.38	.60	.65	.45	.50	.94	1.00
Warren F. Brenizer Co:										
Group A .....	.45	.30	.35	.45	.75	.48	.35	.45	.89	.75
Group B .....	.40	.30	.35	.45	.80	.48	.35	.45	.89	.75
G. B. Mullin .....	.45	.28	.37	.39	.75	.45	.35	.45	.95	.74
Cranford Paving Co.	.53	.30	.37	.43	.77	.47	.40	.47	.89	1.20
Washington Asphalt Block & Tile Co. ....	.50	.....	.37	.43	.....	.....	.....	.....	.85	.....

*Purchase of ground adjacent to the Briggs School, John F. Cook School, and for school site at Langdon, D. C.*

[Opened June 2, 1913.]

Bidder.	Location.	Description.	Price.
Joseph I. Weller *.....	Ground adjacent to the Briggs School.	All of original lot 8, in square 83, con- taining 8,974 square feet.	\$7,500
Do.*.....	Ground adjacent to the John F. Cook School.	All of lots 7, 8, and 9, square 511.....	8,500
Do.....	Site for school in the vicinity of Langdon.	All of parcel 157/4, containing 9.80 acres, located on Queens Chapel Road, north of Otis Street extended.	18,000

*Construction of sewers in the vicinity of Massachusetts and Wisconsin Avenues.*

[Opened June 10, 1913.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	10-inch drainpipe sewer (per linear foot).
E. G. Gummel .....	\$1.00	\$15.00	\$0.88
Warren F. Brenizer Co.* .....	.80	14.00	.60
Lyons Bros.....	.95	15.00	.95

*Laying cement sidewalks in the District of Columbia.*

[Opened June 12, 1913.]

Bidders.	Class A (per square yard).	Class B (per square yard).
Hoge & Luebker Co.* .....	\$0.92½	\$1.16½
The Warren F. Brenizer Co. ....	1.00	1.24

*Q Street Bridge across Rock Creek.*

[Opened June 24, 1913.]

Items.	Bidders.			
	MacArthur Bros. Co.	The Whit- ing-Turner Construc- tion Co.	Hoge & Luebker Co.	C. W. Re- quarth. <sup>1</sup>
1. Earth excavation, ordinary (per cubic yard).....	\$1.20	\$1.55	\$1.67	\$1.46
2. Earth excavation, foundations (per cubic yard).....	1.50	2.22	2.88	2.05
3. Rock excavation (per cubic yard).....	4.50	3.00	3.00	5.95
4. Bridge complete, except items 1, 2, 3; asphalt road- way and lamp-posts, as follows:				
Bid A.....	255,000.00	255,700.00	278,800.00	283,650.00
Bid B.....	252,000.00	254,500.00	272,000.00	265,970.00
Bid C.....	235,000.00	232,600.00	259,200.00	277,100.00
Bid D.....	232,000.00	231,400.00	252,000.00	257,655.00
Bid E.....	212,000.00	192,200.00	227,500.00	261,785.00
Bid F.....	210,000.00	189,998.00	220,500.00	250,433.00
Unit prices:				
(a) A, concrete, bids A to F (per cubic yard).....	7.45	9.80	6.50	.....
(b) B, concrete, bids A to F (per cubic yard).....	11.50	9.80	10.80	.....
(c) C, concrete, bids A to F (per cubic yard).....	13.45	9.80	12.50	.....
(d) D, concrete, bids A to F (per cubic yard).....	12.95	9.80	12.00	.....
(e) E, concrete, bids A to F (per cubic yard).....	20.00	10.00	30.00	.....
(f) Sandstone masonry, A-B (per cubic yard).....	63.50	66.42	58.00	.....
(g) Sandstone masonry, A to D (per cubic yard).....	94.00	98.46	88.00	.....
(h) Sandstone masonry, A to D (per linear foot).....	22.00	22.97	22.00	.....
(i) Sandstone masonry, A to F (each).....	120.00	127.64	125.00	.....
(j) Sandstone masonry, A to D (complete).....	4,900.00	5,238.00	5,200.00	.....
(k) Cast concrete masonry, C to F (per cubic yard).....	29.00	16.17	27.00	.....
(l) Cast concrete masonry, E-F (per cubic yard).....	29.00	16.17	35.00	.....
(m) Cast concrete masonry, E-F (per cubic yard).....	40.00	16.17	50.00	.....
(n) Granite masonry, bases, lamp-posts (each).....	125.00	89.00	75.00	.....
(o) Structural steel, fabrication and delivery (per pound).....	.03½	.03	.03	.....
(p) Structural steel erection (per pound).....	.01	.00½	.00½	.....
(q) Reinforcing steel (per pound).....	.03½	.029	.02½	.....
(r) Damp proofing and water proofing (complete).....	3,000.00	2,095.00	2,000.00	.....

NOTE.—All bids rejected.

<sup>1</sup> If bid is considered, estimate street attached to be used for unit price.*Making sewer and water connections on lots 1, 3, 4, square 1844, Dennison Street NW., near McPherson.*

[Opened June 25, 1913.]

The Caverly Co.....	\$439.58
Maurice J. Colbert.....	386.00

NOTE.—All bids rejected.

*Making sewer and water connections at 317 Twenty-third Street NW.*

[Opened June 25, 1913.]

The Caverly Co.*.....	\$213.18
Coberth, Hanes & White Co.....	314.00
Maurice J. Colbert.....	309.00

*Making sewer and water connections at 1419 and 1421 Half Street SW.*

[Opened June 25, 1913.]

The Caverly Co.....	\$414.11
Clarence A. Brooke.....	395.00
Coberth, Hanes & White Co.*.....	390.00
Maurice J. Colbert.....	394.00

*Making sewer and water connections at Nichols Avenue and High View Place SE.*

[Opened June 25, 1913.]

The Caverly Co.....	\$178.60
Coberth, Hanes & White Co.*.....	157.50
Maurice J. Colbert.....	176.00

*Installing 6 ventilators for the street-cleaning department stable.*

[Opened June 25, 1913.]

O. L. Wolfsteiner Co.*.....	\$210.00
E. J. Hulse Co. (Inc.).....	250.00
The Sheet-Metal Shop.....	294.00
H. J. Gielas.....	230.00
Ernest Gichner.....	294.00

*Installing new heating system in the Jefferson School Building.*

[Opened June 28, 1913.]

The Biggs Heating Co.....	\$9,544
Standard Engineering.....	7,780
Crook, Kries & Co.....	8,950
Coberth, Hanes & White Co.....	10,000
W. G. Cornell Co.....	8,827
York Engineering Co.....	9,812
King Heating Co.....	8,247
Talcott & Poore*.....	6,785

## STATEMENT OF CONTRACTS.

*Contracts entered into for the District of Columbia during the fiscal year 1913.*

## 1. HIGHWAY IMPROVEMENTS.

No.	Name of contractor.	Nature of contract.
5134	George Hyman.....	Grading entrance to Zoological Park.
5140	Warren F. Brenizer Co.....	Cement sidewalks.
5171	Cranford Paving Co.....	Sheet-asphalt and bituminous macadam pavements.
5234	Washington Asphalt Block & Tile Co.....	Asphalt-block pavements.
5246	Cranford Paving Co.....	Grading and improving streets.
5251	Harper & Voigt Co.....	Do.
5255	George B. Mullin.....	Grading Cedar Street.
5256	do.....	Grading various streets.
5267	George Hyman.....	Grading Monroe Street NE.
5291	Atlantic Westrumite Co.....	Westrumite surface on Connecticut Avenue.
5314	George B. Mullin.....	Grading Tilden Street.
5318	Edward G. Gummel.....	Culvert in Eighteenth Street NE.
5322	Martin Dodge.....	Grading Grant Street and Deane Avenue NE.
5340	Charles H. Tompkins.....	Bridges across Watts Branch NE.
5343	Cranford Paving Co.....	Sheet-asphalt and bituminous concrete pavements.
5348	Harper & Voigt Co.....	Grading and improving streets.
5349	Edward G. Gummel.....	Do.
5350	Washington Asphalt Block & Tile Co.....	Asphalt-block pavements.
5355	Hoge & Luebker Co.....	Cement sidewalks.
5259	Harper & Voigt Co.....	Grading Twenty-third Street and R Street SE.

## 2. SEWER CONSTRUCTION.

5191	Warren F. Brenizer Co.....	Section 3, Rock Creek main intercepting sewer.
5258	do.....	Section 1, Michigan Avenue trunk sewer.
5285	Portch & Jones.....	Timber foundation, Anacostia sewer.
5286	Edward G. Gummel.....	Stickfoot Branch trunk sewer outlet.
5294	Warren F. Brenizer Co.....	Sewer in vicinity of Brookland.
5295	do.....	Sewer in Park Place.
5304	do.....	Military Road sewer.
5307	George Hyman.....	Do.
5308	Warren F. Brenizer Co.....	Sewer, valley of Broad Branch.
5319	do.....	Section 2, Anacostia main intercepting sewer.
5320	do.....	Section 3, Anacostia main intercepting sewer.
5321	do.....	Section 4, Rock Creek main intercepting sewer.
5327	George Hyman.....	Fillmore trunk sewer outlet.
5331	do.....	Maryland Avenue trunk sewer.
5332	do.....	Piney Branch trunk sewer.
5363	Warren F. Brenizer Co.....	Sewer in vicinity of Wisconsin and Massachusetts Avenues.

*Contracts entered into for the District of Columbia during the fiscal year 1913—Continued.*

### 3. MATERIAL AND HAULING.

No.	Name of contractor.	Nature of contract.
5129	Potomac River Clay Works.....	Terra-cotta sewer pipe.
5145	North Carolina Granite Corporation..	Granite curb.
5148	Baltimore Clay Products Co.....	Vitrified paving block.
5154	Lewis E. Smoot.....	Sand and gravel.
5158	Lynchburg Foundry Co.....	Miscellaneous castings.
5160	Washington Asphalt Block & Tile Co.	Asphalt paving block.
5181	Morgantown Brick Co.....	Sewer invert brick.
5189	Frederick Brick Co.....	Red sewer brick.
5190	Richard W. Mann.....	Hauling for public schools.
5194	American Sewer Pipe Co.....	Terra-cotta sewer pipe.
5203	Thos. Somerville Co.....	Do.
5213	Union Foundry & Machine Co.....	Miscellaneous castings.
5215	Camden Iron Works.....	Cast-iron water pipe.
5218	Edward G. Gummel.....	Hauling broken stone and screenings.
5231	National Mortar Co.....	Portland cement.
5232	Lynchburg Foundry Co.....	Cast-iron water pipe specials.
5244	Allegheny Valley Brick Co.....	Vitrified paving block.
5247	Fred J. White.....	Miscellaneous castings.
5257	Barrett Manufacturing Co.....	Tar for roads.
5263	Barber Asphalt Paving Co.....	Road oil.
5264	Joseph H. Cranford.....	Do.
5266	Barrett Manufacturing Co.....	Coal-tar paving pitch.
5277	Nathan Trotter & Co.....	Pig lead.
5279	Sun Co.....	Road oil.
5283	Waterbury Co.....	Combination underground cable.
5284	Standard Underground Cable Co.....	Do.
5287	Sun Co.....	Asphalt paving cement.
5305	Lynchburg Foundry Co.....	Cast-iron water pipe.
5317	General Electric Co.....	Underground cable for sewer division.
5326	Crane Co.....	Pipe, valves, etc., for Water Department.
5335	Barrett Manufacturing Co.....	Road oil.
5337	Barber Asphalt Paving Co.....	Do.
5339	Sun Co.....	Do.
5342	Standard Oil Co.....	Do.
5344	United Gas Improvement Co.....	Do.
5351	Thos. Somerville Co.....	Pipe, etc., for Home for Aged and Infirm.
5353	Baltimore Clay Products Co.....	Vitrified paving block.

### 4. BUILDING AND BUILDING REPAIR.

5156	Wm. Rothwell & Son.....	Remodeling work, Western High School.
5201	Samuel A. Gregory.....	Repairing furnaces, etc., in schools.
5268	George E. Wyne.....	Constructing passageway between John W. Ross and James Ormond Wilson Normal Schools.
5273	York Engineering Co.....	Heating plant, John W. Ross School building.
5301	Joseph H. Gibbons.....	Grading, etc., grounds of O street Manual Training School.
5306	George E. Wyne.....	Constructing Normal School building No. 169, colored.
5309	William E. Mooney.....	Constructing pump house and lodge for water department at Anacostia.
5310	do.....	Constructing sheds for street cleaning department.
5316	Coberth, Hanes & White Co.....	Plumbing, Washington Asylum.
5324	York Engineering Co.....	Heating and ventilating system at Normal School, colored, No. 169.
5330	Skinker & Garrett.....	Constructing extension to Home for Aged and Infirm.

### 5. GENERAL SUPPLIES.

5136	James F. Oyster.....	Groceries.
5137	White Oak Coal Co.....	Fuel.
5138	Kraemer & Duehring.....	Hardware.
5142	Joseph N. Snellenburg.....	Furniture.
5143	Washburn-Crosby Co.....	Forage.
5144	Cyrus B. Rees.....	Furniture.
5146	The A. B. Cornell Co.....	Do.
5147	A. G. Spalding & Bros.....	Athletic goods.
5149	Charles Hyass & Co.....	Hardware.
5150	James B. Lambie Co. (Inc.).....	Hardware, plumbing supplies, and saddlery.
5151	Thomas W. Smith.....	Lumber.
5152	George F. Muth & Co.....	Stationery, hardware, paints, etc.
5153	R. Carter Ballantyne.....	Stationery, schoolbooks, etc.
5155	Julius Lansburgh Furniture & Carpet Co.	Furniture.
5157	The Texas Co.....	Oils.
5159	Dulany-Vernay Co.....	Stationery and kindergarten supplies.
5161	Miller-Clagett Co.....	Groceries.
5162	D. Appleton & Co.....	Schoolbooks.
5163	Little, Brown & Co.....	Do.

Contracts entered into for the District of Columbia during the fiscal year 1913—Continued.

5. GENERAL SUPPLIES—Continued.

No.	Name of contractor.	Nature of contract.
5164	American Ice Co.....	Ice.
5165	Leonard P. Steuart.....	Do.
5166	Harry Kaufman.....	Shoes, boots, and dry goods.
5167	American Flag Co.....	Flags.
5168	Charles G. Stott & Co.....	Stationery.
5169	Albert L. Johnson.....	Hardware.
5172	Fred A. Schmidt.....	Stationery, kindergarten supplies, etc.
5173	Lewis Flemer.....	Drugs.
5174	J. A. Whitfield Co.....	Groceries and meats.
5175	R. P. Andrews Paper Co.....	Stationery.
5176	Wm. A. H. Church.....	Lumber.
5177	Miller & Graham.....	Paints.
5178	Charles Scribner's Sons.....	Schoolbooks.
5179	Corby Bros.....	Bread and yeast.
5180	Peerless Rubber Manufacturing Co.....	Plumbing supplies.
5182	Crane Co.....	Do.
5183	Standard Oil Co.....	Oils.
5184	Eagle Pencil Co.....	Stationery.
5185	Manhattan Coffee Mills.....	Groceries.
5187	Martin L. Horn.....	Dry goods.
5188	The Hoge & McDowell Co.....	Forage.
5192	Lansburgh & Bro.....	Furniture and dry goods.
5196	Mackall Bros.....	Drugs.
5197	Globe-Wernicke Co.....	Stationery and furniture.
5198	Z. D. Gilman.....	Drugs and saddlery.
5199	B. F. Bond Paper Co.....	Stationery.
5200	Cuyler & Mohler.....	Plumbing supplies.
5202	The Prang Co.....	Stationery, schoolbooks, and paints.
5205	Chesapeake Supply Co.....	Plumbing supplies.
5206	George G. Meeley.....	Automobile supplies.
5207	Martin Wiegand.....	Furniture and lumber.
5208	Progressive Paper Products Co.....	Stationery.
5210	W. B. Moses & Sons.....	Furniture and dry goods.
5211	Frank Hume (Inc.).....	Groceries.
5212	J. Edward Chapman.....	Fuel.
5214	George M. Oyster, jr.....	Milk and cream.
5216	R. P. Clarke Co.....	Stationery and dry goods.
5219	Eugene H. Pitcher.....	Stationery.
5220	W. M. Galt & Co.....	Forage.
5221	American Book Co.....	Schoolbooks.
5222	Hoover & Denham.....	Groceries and meats.
5223	Joseph E. Dyer.....	Groceries.
5224	Gallihier & Huguely.....	Lumber.
5225	Washington Tobacco Co.....	Tobacco.
5226	Lutz & Co.....	Saddlery, etc.
5227	Mathers-Lamm Paper Co.....	Stationery.
5228	John E. Hantzmon.....	Do.
5229	Consolidated Sales Co.....	Plumbing supplies.
5230	J. Maury Dove Co.....	Fuel.
5233	William W. Conner.....	Stationery, schoolbooks, paints, dry goods, and kindergarten supplies.
5236	Armour & Co.....	Groceries and drugs.
5237	Wm. Hahn & Co.....	Shoes.
5238	Thos. Somerville Co.....	Hardware and plumbing supplies.
5239	C. G. Dade & Co.....	Milk and cream.
5240	Dulin & Martin.....	Furniture and hardware.
5241	Louis Hartig.....	Hardware, plumbing material, saddlery, etc.
5243	Barber & Ross.....	Hardware, paints, automobile supplies, etc.
5249	National Electrical Supply Co.....	Oils, electrical supplies, and automobile supplies.
5252	W. A. Smoot & Co. (Inc.).....	Fuel.
5253	W. T. Gallihier & Bro. (Inc.).....	Lumber.
5261	E. J. Murphy Co.....	Paints, automobile supplies, etc.
5262	Thos. E. Young.....	Saddlery.
5265	Hugh Reilly Co.....	Paints.
5269	F. A. Denison.....	Groceries.
5347	William A. H. Church.....	Lumber.
5352	W. T. Gallihier & Bro. (Inc.).....	Do.
5356	W. M. Galt & Co.....	Forage.
5357	Washington Tobacco Co.....	Tobacco.
5359	The Hoge & McDowell Co.....	Forage.
5360	White Oak Coal Co.....	Fuel.
5365	Wm. H. Horstman Co.....	Flags.
5366	American Ice Co.....	Ice.
5367	A. G. Spalding & Bros.....	Athletic goods.
5368	James F. Oyster.....	Groceries.
5369	Hoover & Denham.....	Groceries and meats.
5370	McKee Surgical Instrument Co.....	Drugs.
5371	Corby Bros.....	Bread and yeast.
5372	Thomas W. Smith.....	Lumber.
5374	Manhattan Coffee Mills.....	Groceries.
5375	Ward W. Griffith.....	Fuel.

*Contracts entered into for the District of Columbia during the fiscal year 1913—Continued.*

5. GENERAL SUPPLIES—Continued.

No.	Name of contractor.	Nature of contract.
5376	J. Edward Chapman.....	Fuel.
5377	Wm. Hahn & Co.....	Shoes.
5378	D. Appleton & Co.....	Schoolbooks.
5379	Becker's Leather Goods Co.....	Saddlery.
5380	F. A. Denison.....	Groceries.
5381	Harry Kaufman.....	Shoes and dry goods.
5382	New Jersey School & Church Furniture Co.....	Furniture.
5383	Crane Co.....	Plumbing supplies.
5386	Westinghouse Lamp Co.....	Electrical supplies.
5387	Frank Hume (Inc.).....	Groceries.
5388	Goodyear Tire & Rubber Co.....	Saddlery and automobile supplies.
5389	Northland Rubber Co.....	Automobile supplies.
5390	Fowler Waste Manufacturing Co.....	Plumbing supplies.

6. MISCELLANEOUS.

5135	Auburn Wagon Co.....	Wagons for sewer division.
5141	Hersey Manufacturing Co.....	Water meters.
5170	Thomas Hampton.....	Brick kilns, brick-making plant, workhouse, Occoquan, Va.
5186	Thos. Dowling & Co.....	Auctioneer services.
5193	The Tolman Laundry.....	Laundry work.
5195	Dennis J. McCarthy.....	Removing refuse from markets.
5204	Chesapeake Supply Co.....	Boilers for Dent School.
5209	Kelly Printing Co.....	Printing.
5217	Capital Towel Service Co.....	Laundry work.
5235	Cook & Stoddard Co.....	Two motor trucks for sewer division.
5242	Willis W. Tolson.....	Sandwiches and coffee for prisoners at police court.
5245	Imperial Motor Co.....	Motor car for street cleaning department.
5248	Miller Bros. Automobile & Supply House.....	Hire of motor cycles and motor vehicles for electrical department.
5250	The Ironworks Co.....	Stokers for water department pumping station.
5254	Jacob Shannon & Co.....	Two concrete mixers for sewer division.
5260	Thomson Meter Co.....	Water meters.
5270	Commercial Automobile & Supply Co.....	Motor car for surveyor, District of Columbia.
5271	do.....	Motor delivery wagon for electrical department.
5272	Union Foundry Co.....	Cast-iron lamp-posts, etc.
5274	Glauber Brass Manufacturing Co.....	Curb and corporation cocks.
5275	Imperial Motor Co.....	Motor truck for parking commission.
5276	John L. Gaumer Co.....	Street signs and frames.
5278	Warren Bros.....	Portable asphalt plant.
5280	Buffalo Steam Roller Co.....	Steam road roller for surface division.
5281	Ahrens-Fox Fire Engine Co.....	Repairing engine No. 621.
5282	do.....	Combination engine and hose wagon.
5288	Nathan A. Rice.....	Horses for fire department.
5289	A. P. Smith Manufacturing Co.....	Fire hydrants.
5290	The Webb Co.....	Hook and ladder truck.
5292	Eureka Fire Hose Manufacturing Co.....	Fire hose.
5293	Builders' Iron Foundry.....	Meter tubes.
5296	Standard Electric Time Co.....	Clock system, James Ormond Wilson Normal School.
5297	Manning, Maxwell & Moore.....	Brick cars for brick-making plant, workhouse, Occoquan, Va.
5298	Buick Motor Co.....	Motor car for inspector of buildings.
5299	James G. Wilson Manufacturing Co.....	Rolling doors for street cleaning department stables.
5300	Henry F. Boswell.....	Repairing patrol steamer Vigilant.
5302	Sudworth Printing Co.....	Printing and binding tax list.
5303	The Platt Iron Co.....	Plunger pumps for water department.
5311	Des Moines Bridge & Iron Co.....	Water towers for water department, Anacostia.
5312	The Foos Gas Engine Co.....	Oil engines for water department.
5313	Manning, Maxwell & Moore.....	Cranes for water department.
5315	Derby Desk Co.....	Assembly-hall chairs, James Ormond Wilson Normal School.
5323	Link-Belt Co.....	Jack shaft for water department.
5325	Arthur Bryant.....	Purchase of oyster shells at fish wharf.
5328	Warner Stutler.....	Collecting and disposing of night soil.
5329	Ahrens-Fox Fire Engine Co.....	Repairing fire engine No. 320.
5334	David S. Hendricks Co.....	Motor car for superintendent, suburban roads.
5336	Zell Motor Car Co.....	Motor car for street cleaning department.
5338	Cook & Stoddard Co.....	Motor patrol wagons.
5341	Pittsburgh Meter Co.....	Water meters.
5345	Coffin Valve Co.....	Sluice gates for sewer division.
5346	James W. Bean.....	Collecting and disposing of ashes from municipal buildings.
5354	Kelly Printing Co.....	Printing.
5358	The Miller Co. (Inc.).....	Motor car for fire department.
5361	Miller Bros. Automobile & Supply House.....	Three motor cars for electrical department.
5362	Lewis Hopfenmaier.....	Purchase of old materials.
5364	The Aumen Machinery Co.....	Lathe for fire department.
5373	The Carnahan Press.....	Printing.
5384	Thomas Regan.....	Removing refuse from markets.
5385	Tolman Laundry.....	Laundry work.



## REPORT OF THE WHARF COMMITTEE.

WASHINGTON, D. C., *September 26, 1913.*

SIR: The wharf committee has the honor to submit the following report of its operations for the fiscal year ended June 30, 1913.

Accompanying is a list of the wharf property now under lease on the Potomac River, Anacostia River, or Eastern Branch, and the James Creek Canal.

The rentals received from Potomac River wharves during the year amounted to \$22,966.24; from the Anacostia River wharves, \$1,110.75; and from the James Creek Canal frontage \$1,533.25, making the total amount received during the year \$25,612.24.

## AVAILABLE WATER FRONTAGE.

The actual water frontage in the District of Columbia, with the exception of canals devoted to commerce, is about 2 miles. The total available water frontage, exclusive of canals, which is practicable of commercial development, is about 18 miles; this frontage, however, includes the portion set apart for parks and purposes of the United States—about 8 miles.

## WHARVES ALONG THE WASHINGTON CHANNEL.

The largest amount of wharf property is that along the Washington Channel. This has a total frontage on the city side of 9,275 linear feet, of which 4,675 linear feet, between the grounds of the War College and the south curb line of N Street, is under the jurisdiction of the Chief of Engineers, United States Army, and the remaining 4,600 feet, between the south curb line of N Street south and Fourteenth Street SW., is under the jurisdiction of the Commissioners of the District of Columbia.

The original leases for these wharves were with a few exceptions made for periods of 10 years from March 15, 1903, and the leases expired March 15, 1913. These leases have been renewed for an additional period of five years from March 15, 1913, at increased rentals. The basis of these rentals is a net return of 4 per cent on the estimated value of the wharf property, with the requirement that the lessee shall make the improvements and repairs. No appropriation has ever been made for improving this water frontage, nor for dredging adjacent to the wharves, and the wharf property is, particularly the wharves themselves which are of pile construction, deteriorating rapidly.

Along this frontage are located the harbor police station, the dock of the harbor boat, the house and dock of the fire boat, the District morgue, a District property yard, and the municipal fish wharf and market.

## MUNICIPAL FISH WHARF AND MARKET.

The municipal fish wharf and market was established by a provision in the District appropriation act for the fiscal year 1914 approved March 4, 1913, as follows:

"\* \* \* the Commissioners of the District of Columbia are authorized and directed in the name of the District of Columbia to take over, exclusively control, regulate, and operate as a municipal fish wharf and market, the water frontage on the Potomac River lying south of Water Street, between Eleventh and Twelfth Streets, including the buildings and wharves thereon, and said wharf shall constitute the sole wharf for the landing of fish and oysters for sale in the District of Columbia; and said commissioners shall have power to make leases, fix and determine rentals, wharfage and dockage fees, and to collect and pay the same into the Treasury, one-half to the credit of the United States and one-half to the credit of the District of Columbia, and to make and amend, from time to time, all such regulations as they may deem proper for the control, regulation, and operation of said municipal fish wharf and market; and all leases, subleases, and other private rights of occupancy in and to any or all of said property are terminated on, from, and after March fifteenth, nineteen hundred and thirteen; and all laws and parts of laws requiring the advertisement and sale of rights and privileges for a fish wharf or dock, and all laws or parts of laws inconsistent with the provisions hereof, are repealed."

This wharf was formerly leased to W. W. Riley, which lease expired March 15, 1908. The jurisdiction over the wharf was placed by the commissioners under the superintendent of weights, measures, and markets. An appropriation of \$800 was made for repairs to the structures located on this wharf, but these are old and should be replaced by a modern fish market, and the wharf reconstructed.

## WHARVES ALONG THE ANACOSTIA RIVER.

This frontage is largely undeveloped, owing to the uncertainty of ownership of the abutting land and riparian rights.

Nine leases to private parties have been made to land abutting on the river at the foot of streets where there is no question of title involved, and there is also located on this frontage the sewerage pumping station, and a wharf recently constructed adjacent thereto, which is used as a property yard for the receipt and transport of material from Occoquan, Va.

The matter of establishing the title of the United States to this frontage is now being taken up by the Attorney General, who it is understood has instituted several suits against persons claiming private rights along this frontage.

## WHARVES ALONG THE GEORGETOWN CHANNEL.

All the wharf property along this frontage is under private control with the exception of the foot of streets. Two leases have been entered into with private parties, one for the foot of Thirty-third Street and one for the foot of G Street.

## JAMES CREEK CANAL.

This canal, which formerly extended from G Street to the Anacostia River, has been filled to N Street. From N to P Streets, a distance of about 1,000 feet, the frontage on both sides of the canal is under lease. From P Street to the outlet of the canal, a distance of about 3,000 feet, it extends along the grounds of the War College and Engineer School. This portion of the canal is very much in need of dredging, as shipping can only enter and leave it at times of high tide. It is believed that the revenue which is derived from leases along this frontage, amounting to about \$1,600 per annum, would justify the dredging of the canal and the rebuilding of the walls if it is to be kept open so as to make it more available for commercial purposes. Two large lumber yards occupy public space adjacent thereto, and there are also established here wood yards and a brickyard.

The commissioners were given control of the canal and the public space adjacent thereto by the District appropriation act approved July 1, 1902, which authorized the commissioners to fence the canal and lease the public space adjacent thereto for commercial use.

## IMPROVEMENT OF THE HARBOR FRONT.

On May 23, 1908, the commissioners forwarded to Congress plans for the improvement of the harbor front, together with a report thereon which was printed as Senate Document 519, Sixtieth Congress, first session. No congressional action was taken on this report.

It will soon become necessary to rebuild all of the wharf structures along this frontage, and when this is done it should be along some definite plan. As the plan above referred to has not received the approval of Congress, it is the opinion of the committee that the plan should be modified so as to reduce the cost. To properly present this matter to Congress it would be necessary to make surveys, plans, and estimates, and your committee recommends that an item for an appropriation of \$1,000 for this work be included in the next estimates of the commissioners to Congress.

DANIEL E. GARGES, *Chairman*,  
D. E. McCOMB,  
RUSSEL DEAN,  
*Wharf Committee.*

Lieut. Col. CHESTER HARDING,  
*Engineer Commissioner, District of Columbia.*

*List of wharf property under lease June 30, 1913.*

## POTOMAC RIVER FRONT.

Name of lessee.	Location.	Expires.	Water frontage.	Area.	Rental per year.
			<i>Lin. ft.</i>	<i>Sq. ft.</i>	
American Ice Co. ....	Sec. 2, structures 54 to 67, inclusive, except structure 59.	Mar. 15, 1918	.....	61,200	\$3,048.24
Samuel Bensinger. ....	Sec. 1, structures 26 to 30, inclusive.	Sept. 30, 1917	120	7,000	460.00
Capital Yacht Club. ....	Foot of 9th St. SW., between structures 39 and 41.	June 30, 1913	24	2,080	75.00
James H. Carter & Co..	Sec. 3, structures 24 to 27, inclusive.	Monthly. ....	200	26,600	1,000.00

*List of wharf property under lease June 30, 1913—Continued.*

## POTOMAC RIVER FRONT—Continued.

Name of lessee.	Location.	Expires.	Water frontage.	Area.	Rental per year.
L. A. Clarke & Son.....	Sec. 2, structures 68 to 77, inclusive, including 70½.	May 1, 1913	<i>Lin. ft.</i> 280	<i>Sq. ft.</i> 45,800	<sup>1</sup> \$750.00
Colonial Beach Co.....	Sec. 1, structures 31 to 37, inclusive..	Mar. 15, 1918	132	8,000	500.00
Cranford Paving Co.....	Foot of 31st St. NW.....	Feb. 1, 1918	53		240.00
Dawson Boat Co.....	Sec. 2, structures 39 and 40.....	Mar. 15, 1914	40	2,400	70.00
J. Maury Dove Co. (Inc.)	Sec. 3, structures 12 to 20, inclusive..	.....do.....	168	38,000	1,570.00
Do.....	Foot of G St. NW.....	Monthly	100		120.00
G. W. Forsberg.....	Sec. 2, structures 22 to 33, except structures 24 and 118, 119, and 120.	Mar. 15, 1918	156	18,000	733.00
W. E. Garner et al.....	Sec. 2, structures 36, 37, and 38.....	Mar. 15, 1914	44	3,320	100.00
Gardiner, Edw. J.....	Sec. 3, structure 21.....	Oct. 1, 1913	20	1,600	75.00
Carl J. F. Graff.....	Foot of 13½ St. SW.....	Monthly	126	11,015	440.00
E. Madison Hall.....	Sec. 2, structures 78, 79, 80, 81, 82, 85, 86, 87, and 88, except land occupied by fish houses of A. J. White and E. G. Hammond.	Mar. 15, 1918		26,800	1,200.00
Wm. C. Hamburg.....	Sec. 3, structure 23.....	Apr. 15, 1914	18	1,440	60.00
Johnson & Wimsatt.....	Sec. 3, structures 5 to 11, inclusive...	Mar. 15, 1918	190	43,500	2,244.00
Mount Vernon & Marshall Hall Steamboat Co.	Sec. 1, structures 59, 62, 63, and 64...	Mar. 15, 1913	125	10,000	600.00
Norfolk & Washington Steamboat Co.	Sec. 1, structures 41 to 49, inclusive, and 57 to 69, inclusive.	Mar. 15, 1918	220	20,300	1,500.00
Do.....	Sec. 1, structures 60 and 65 to 72, inclusive.	Dec. 16, 1916	190	44,000	2,345.00
Potomac & Chesapeake Steamboat Co.	Sec. 2, structures 11, 12, 13, 14, 15, 16, 17, 17½, 18, 19, 20, and 21.	Mar. 15, 1918	198	35,600	1,596.00
Wm. A. Ragan.....	Sec. 2, structure 22.....	Mar. 15, 1914	45	2,600	100.00
Lewis E. Smoot.....	Foot of 14th St. SW.....	Monthly	233	27,960	1,120.00
Jos. P. Stephenson, trading as Stephenson & Bro.	Sec. 2, structures 1 to 10, inclusive...	Jan. 31, 1917	300	59,900	2,300.00
Wimsatt & Church.....	Sec. 2, structures 34 and 35.....	Mar. 15, 1918	80	18,000	720.00
District of Columbia municipal fish wharf and market.	Sec. 2, structures 89 to 97, inclusive; structures 98 to 129, inclusive; sec. 3, structures 1 to 4, inclusive, and fish houses on structure 84, sec. 2.		550	125,300	
District of Columbia sand wharf.	Sec. 2, structures 41, 42, and 43 to 53, inclusive.		183	26,648	
District of Columbia fire-boat wharf.	Sec. 1, structures 39 and 40.....				
District of Columbia morgue.	Sec. 1, structures 41 and 42.....				
District of Columbia harbor-master's wharf.	Sec. 1, structure 38 and sec. 2, slip between structure 41 and 42.				
Total.....					22,966.24

<sup>1</sup> Also \$750 in improvements.

## ANACOSTIA RIVER (EASTERN BRANCH).

Name of lessee.	Location.	Expires.	Water frontage.	Rental per year.
Harry D. Bailey.....	North side, just west of Anacostia Bridge to west abutment wall of old Anacostia Bridge.	Oct. 18, 1913	<i>Feet.</i> 81	\$76.00
C. C. Carlsen.....	Water front, between building lines of 4th St. SE.	June 1, 1914	50	50.00
James H. Carter & Co...	Water front, foot of 4th St. SE., in square 803.	.....	265.2	( <sup>1</sup> )
Edward S. Dean.....	Water front, between the lines of N St. SE.	( <sup>2</sup> )		67.50
W. H. Dorsey.....	North side, between building lines of 9th St. SE.	( <sup>3</sup> )		22.50
Eastern Power Boat Club.	Directly west of the west abutment of the old Anacostia Bridge.	June 30, 1916	93	162.75
District of Columbia, sewer division.	Foot of 1st St. SE., opposite lot 1, square south of square 744.	Nov. 5, 1914 Apr. 1, 1916 Dec. 31, 1915	{ 198	.....
Thos. W. Smith.....	Square south of square 744.....		{ 132	132.00
Lewis E. Smoot.....	Foot of 3d St. SE., square 803.....		{ 106.3	400.00
Standard Oil Co.....	Water front, between building lines of Q St. SE.		{ 40	200.00
United States, Superintendent Capitol Building and Grounds.	Foot of 1st St. SE., opposite square south of square 744.			
Total.....				1,110.75

<sup>1</sup> In litigation.<sup>2</sup> Monthly lease.<sup>3</sup> Canceled.

*List of wharf property under lease June 30, 1913—Continued.*

## JAMES CREEK CANAL.

Name of lessee.	Location.	Expires.	Water frontage.	Rental per year.
			<i>Feet.</i>	
W. A. Anderson.....	Part of parcel No. 8.....	Oct. 1, 1913	127	\$158. 75
Galliber & Huguely.....	Parcels Nos. 5, 7, and 11.....	June 30, 1913	277	207. 75
Lewis Jefferson.....	Parcel No. 9.....	.....do.....	100	75. 00
Robert Murphy.....	Parcels Nos. 1 and 3.....	.....do.....	445	173. 50
Henry Raum.....	Parcel No. 31.....	Nov. 7, 1913	50	12. 50
George C. Taylor.....	Part of parcel No. 8.....	Nov. 15, 1913	136	225. 00
Do.....	Parcels No. 4 and 6, and south part of parcel No. 8.	Feb. 1, 1914	195	171. 25
Urban & Bradley.....	Parcel No. 13.....	Mar. 15, 1914	125	84. 00
Washington Brick & Terra Cotta Co.	Parcels Nos. 2 and 10.....	June 30, 1913	570	427. 50
Total.....				1,535. 25

## TOTAL RENTALS.

Potomac River front.....	\$22,966. 24
Anacostia River (Eastern Branch).....	1,110. 75
James Creek Canal.....	1,535. 25
	25,612. 24

## REPORT OF THE BOARD FOR THE CONDEMNATION OF INSANITARY BUILDINGS.

WASHINGTON, D. C., *August 28, 1913.*

GENTLEMEN: We have the honor to submit the following report of the transactions of the board for the condemnation of insanitary buildings for the year ending June 30, 1913:

## EXAMINED.

	1907	1908	1909	1910	1911	1912	1913
Buildings in alleys.....	175	156	79	94	78	85	<sup>1</sup> 215
Buildings in streets.....	274	454	349	315	315	356	311
Total.....	449	510	428	409	393	441	526

## DEMOLISHED.

	89	124	52	68	42	47	<sup>1</sup> 181
Buildings in alleys.....	115	217	179	154	145	271	134
Buildings in streets.....							
Total.....	204	341	231	222	187	318	315

## REPAIRED.

	33	64	50	97	71	38	23
Buildings in alleys.....	61	66	115	187	142	107	91
Buildings in streets.....							
Total.....	94	130	165	284	213	145	114

<sup>1</sup> This number includes houses in Willow Tree Alley SW. demolished under the act of Congress appropriating \$78,000 for the conversion of this alley into an interior park. The buildings were condemned by the board in order to vacate the premises.

*Total number of houses acted upon since the creation of the board for the condemnation of insanitary buildings up to and including June 30, 1913.*

	Examined.	Demolished.	Repaired.	Pending.
Buildings in alleys.....	882	623	376	41
Buildings in streets.....	2,273	1,215	739	161
Total.....	3,155	1,838	1,115	202

Cases referred to other departments for appropriate action under existing regulations..... 492

Total number of meetings of the board for the condemnation of insanitary buildings for the year ending June 30, 1913..... 19  
 Preliminary notices served..... 221  
 Condemnation notices served..... 56  
 Condemnation signs affixed to buildings..... 103

Total..... 399  
 Estimated number of tenants required to secure other quarters in streets and alleys through action on the part of the board for the year ending June 30, 1913. 968  
 Total number since the creation of the board..... 5, 293  
 Benefited by repairs in streets and alleys for the year ending June 30, 1913... 413  
 Total number benefited by repairs in streets and alleys since the creation of the board..... 4, 124  
 Inspections and miscellaneous visits made during the year in connection with the examination of buildings and the service of notices..... 4, 524

Three cases have been referred to the corporation counsel for appropriate action in the police court which resulted in the vacation and removal of the buildings in question. No cases are pending before the Supreme Court of the District relative to the condemnation of property.

Special attention has been and is still being given to structures unprovided with sewer and water connections with a view of assisting the health department in eliminating box privies by making the owner or owners provide such connections or remove the structure if the condition does not warrant the expense of connecting it with public sewer and water main. In the enforcement of the regulations requiring proper sanitary conditions where food is served to transient customers, the board has made examination of many lunch rooms, oyster houses, and other places where food was prepared, in order to have the buildings placed in a sanitary condition, demolished, or vacated for the purposes used.

With a few exceptions the houses in the alleys at the present time are not condemnable to destruction, but are kept in repair because of notices served from time to time as conditions warrant.

A great deal of voluntary repair work has been done by the owners and agents during the year, a record of which could not be kept by the board. Credit is due to owners, both resident and nonresident, and also to the real estate agents for a prompt compliance with the orders of the board and also for assistance rendered where the service of notice was peculiarly difficult.

The owners and agents have generally complied with the orders of the board in repairing or demolishing the buildings under notice, and it has not, therefore, been necessary for the board to demolish any buildings caused by the failure or neglect of the owners or agents to take appropriate action.

Consideration has been and still is being given to insanitary stables, both frame and brick, which by the lack of proper sewer connections and defective floor paving provided breeding places for flies and rats. Proper repairs have been required or the buildings have been vacated or demolished.

The board prepared an exhibition for the International Congress of Hygiene and Demography held in this city, showing photographs of houses in streets and alleys, pin maps showing houses removed and repaired, and other data pertaining thereto.

Respectfully submitted.

J. L. SCHLEY,  
*Captain, Corps of Engineers, United States Army,*  
*Assistant Engineer Commissioner.*

WM. C. WOODWARD, M. D.,  
*Health Officer, District of Columbia.*

MORRIS HACKER,  
*Inspector of Buildings, District of Columbia.*  
*Board for the Condemnation of Insanitary Buildings.*

## REPORT OF ASSISTANT ENGINEER IN CHARGE OF ROCK CREEK PARK.

WASHINGTON, October 1, 1913.

SIR: I have the honor to submit herewith a report of operations and a statement of expenditures in Rock Creek Park for the year ending June 30, 1913.

The amount appropriated for the care and improvement of the park was \$25,000. This was expended as shown on the accompanying report.

## Appropriation Rock Creek Park, D. C., 1913.

Job No.	Location.	Work.	Stone and screenings.	Hauling stone and screenings.	Pipe and cement.	Lumber and fittings.	Oil.	Labor.	Material, supplies, and miscellaneous work.	Cost.
2600	Rock Creek Park.....	Care and maintenance.						\$6,066.38		\$6,168.47
2601	Beach drive, east end of bridge over Rock Creek.	Widen.....	\$215.60		\$102.09	\$31.07		1,781.22		2,028.83
2602	Beach drive extended.....	Grading and macadamizing.....	2,403.98	\$1,264.55		29.42		4,671.75		8,469.70
2603	do.....	Quarry and crush stone.....			3.15			1,984.32		1,984.32
2604	Convenience station.....	Constructing sewer and water service.				93.06		118.25		211.31
2605	Morrow Road.....	Oil.....	11.28				\$24.75	40.00		76.03
2606	General.....	Building tool wagon.....						39.00		124.88
2607	do.....	Repair roller No. 3.....				85.88		22.73		22.73
2608	Wise Road.....	Grading and macadamizing.....	52.21	166.50	16.85			978.88		1,214.44
2609	do.....	Quarry and crush stone.....						1,012.63		1,012.63
2610	General.....	Making benches.....						326.41		326.41
2611	Camp Good Will.....	Farming.....						194.00		194.00
2612	Park roads.....	Oiling.....					1,075.11			1,233.36
		Blacksmith work.....						155.25		248.15
		Coal.....							\$348.15	
		Forage.....							68.80	
		Tools, etc.....							729.53	
		Paint, etc.....							272.99	
		Dynamite, etc.....							30.65	
		Nails, etc.....							122.71	
		Kerosene.....							12.80	
		Cylinder oil.....							4.24	
		Grease.....							4.00	
		Axle grease.....							21.60	
		Miscellaneous.....							514.69	
		Balance.....							4.73	
Total.....			2,683.07	1,431.05	123.03	239.43	1,103.86	17,387.67	2,032.89	25,000.00

Retaining walls and new approaches were completed at the east end of the bridge at Pierces Mill, providing a relief from a constricted and dangerous condition.

The convenience station at Pierces Mill was finished.

The grading and macadamizing of an extension of the Beach driveway north of the Military Road, 2.3 miles in length, begun last year, was completed, and affords a very desirable addition to the park drives.

The total cost of this roadway, which was graded 24 feet wide and macadamized 16 feet wide, with a compacted thickness of 6 inches of stone, was about \$7,206 per mile or a total of \$16,574, including overhead charges, of which about \$11,700 was expended during the year from park funds.

The cost of surfacing was about \$0.70 per square yard. About two-thirds of the stone used was quarried in the park.

On the completion of this road, work was begun on a road extending westerly from the Beach driveway across the northern end of the park, about one-half mile in length, and this road was nearly completed within the limits of the park at the close of the year.

The macadamized roads of the park were all oiled and kept in good repair. The bridle and footpaths were maintained in good condition, and the grounds were kept mowed.

Almost sufficient corn and hay was raised in the park during the year to provide for the 12 horses in use.

By the cooperation of the Bureau of Forestry, Department of Agriculture, an arboretum was established on the north side of the Military Road near Camp Good Will, and a large number of trees of various kinds were planted, most of which are flourishing. A number of Japanese cherry trees were planted near Pierce Mill.

The construction of bridle paths and footpaths was continued, and many extensions were made. The meadow at the north end of the park was fenced in and was planted in corn.

During the year the dwellings and barn occupied by the water department at the north end of the park were burned, and the use of this area by the water department was discontinued.

The mileage of roads in the park is as follows at the close of the year:

	Miles.
Macadamized county roads, used for all classes of traffic.....	1.9
Macadamized park roads, restricted to light traffic.....	8.2
Earth roads, restricted to horse traffic.....	1.0
<b>Total.....</b>	<b>11.1</b>

There is also approximately double this number of bridle paths, and about 5 miles of footpaths.

During the coming year it is proposed to begin the construction of a road through Piney Branch Parkway, to complete walls at the west end of the bridge at Pierces Mill, and to construct connecting roads in the park.

Respectfully submitted.

L. R. GRABILL,

*Assistant Engineer, Rock Creek Park, District of Columbia.*

Lieut. Col. CHESTER HARDING,

*Engineer Commissioner, District of Columbia,*

*Secretary, Board of Control, Rock Creek Park.*

## REPORT OF THE SUPERINTENDENTS OF THE DISTRICT BUILDING.

WASHINGTON, D. C., August 14, 1913.

GENTLEMEN: We have the honor to report that, in addition to the routine work incident to the maintenance of the Municipal Building for the fiscal year 1913, a number of improvements, extensions, and changes have been made to the building and mechanical equipment—among others the subdivision of room 339 by the erection of a plaster partition at the north end, making room 341, and erecting an oak and glass partition at the south end, all of which space is now occupied by the public utilities commission; the subdivision of room 2, occupied by the supervisor of playgrounds, by the erection therein of an oak and glass partition; the erection of counter railings in room 221 of the insurance department and room 327 of the street cleaning department.

The windows on the court and the south side of the building were equipped with metal weather stripping, thus completing the weather stripping of the building.

Direct radiation was provided in night-service rooms as far as practicable and to all rooms which have proved to be unusually hard to heat by the indirect system.

New and improved locks and hangers for all elevator doors have been procured and are being installed; a motor-driven floor-polishing machine has been built and installed; a small motor-driven air compressor, to furnish high-pressure air for blowing out motors, generators, etc., and for use in the health department laboratories, was installed; the motor of the stoker drive, which has been used for driving shop machinery and which has proved inadequate for such work, has been replaced by a new and adequate motor; and a motor-generator set for charging small storage batteries was installed.

During the year 30,000 kilowatt hours of current was furnished the electrical department for the telephone, fire alarm, and police patrol-box system. Electrical power, steam, compressed air, and hot water for industrial purposes was also supplied to two laboratories of the health department and the laboratory of the inspector of asphalt and cement, but the amount is not known for the reason that it is impracticable at this time to install meters.

The estimates for the fiscal year ending June 30, 1913, provided for a reduction of the force of cleaners at \$240 per annum (charwomen) from 40 to 36. Congress reduced the number to 30, beginning July 1, 1912. Experience of the past 13 months, and careful observation of cleaning methods, force, and results in a number of other buildings of similar character in Washington, and an analysis of the cost in this building, two Federal buildings, and one first-class commercial office building has demonstrated that this number (30) is inadequate to maintain present-day standards of cleanliness without working the charwomen greatly in excess of what obtains in buildings of this character, and the increase asked for in the estimates for next fiscal year (to 35) is the minimum which should be employed to produce satisfactory results.

The sundry civil bill, as passed by the present Congress, authorizes the Secretary of the Treasury to construct a central power plant to furnish light, heat, and power for a number of buildings, including the District Building. It is estimated that this plant will be in operation in a little less than three years from now. The bill carries an appropriation sufficient to cover the cost of all necessary changes.

This office has prepared a statement giving the actual cost for light, heat, and power for the fiscal year ending June 30, 1912, and an estimate based on actual performance during that same year and the unit prices given by the committee in charge of the central power station. The actual cost for the fiscal year 1912, including fixed charges of \$1,400 and excluding care of plumbing, is shown therein to be \$19,550 and the estimated cost of the same service from the central station to be \$25,652.76.

Details of expenditures are shown in the auditor's report of the appropriation for the "Maintenance of Municipal Building, District of Columbia, 1913."

Very respectfully,

MARK BROOKE,  
*Captain, Corps of Engineers, United States Army.*

J. L. SCHLEY,  
*Captain, Corps of Engineers, United States Army,*  
*Jointly Superintendents of the Building.*

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

(Through Lieut. Col. Chester Harding, Corps of Engineers, United States Army,  
Engineer Commissioner, District of Columbia).



## APPENDIX.

### SPECIFICATIONS FOR PAVING STREETS WITH SHEET ASPHALT AND BITUMINOUS MACADAM.

1. *Work.*—The work to be done under this contract will consist of paving with sheet asphalt such streets, avenues, and roads in the District of Columbia, or parts thereof, or doing any portion of such work as may be ordered in writing by the Commissioners of the District of Columbia under appropriation for the fiscal year ending June 30, 1913. The estimated amount is 21,000 square yards of asphalt surface and 1,700 square yards of vitrified block gutter, 6,000 square yards of bituminous macadam on a concrete base and 5,000 square yards of bituminous macadam on a broken-stone base. These amounts are approximations only and may be considerably varied from, but they will be used in canvassing bids, and the awards will be based thereon. One award will be made to the lowest acceptable bidder for all the asphalt pavement including their vitrified block gutters and another award to the lowest acceptable bidder for all the bituminous macadam (items 3 and 4 of the proposal). The commissioners especially reserve the right to regulate the time and order of executing work ordered under this contract as may appear most advantageous to the interests of the District.

2. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the roadbed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, red lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor, and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

3. *Grading and subgrade for concrete base.*—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depths as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

6. *Concrete base.*—Upon the bed thus prepared there will be laid a 6-inch foundation of concrete as directed, made of the following materials, by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel.

Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

5. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to

extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work or while being hauled upon the work shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished and collect the amount due therefor from any moneys found to be due to said contractor by the District.

6. *Sand*.—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

7. *Broken stone*.—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

8. *Gravel*.—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions and shall run from that down to pea size, well graduated.

9. *Water*.—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

10. *Platforms*.—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work and kept there until used.

11. *Mixing*.—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring 1 barrel of cement, the platform must not be smaller than 10 feet by 12 feet, nor will a larger amount of concrete than can be made with 1 barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

12. *Setting*.—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

13. *Binder*.—The binder course shall be composed of clean, broken stone, equal in quality to the stone for the base, and passing a 1½-inch screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than 1½ inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will

be at least  $1\frac{1}{2}$  inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond, it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it, and, when ordered by the engineer, shall sprinkle it in warm weather between the hours of sunset and sunrise as often as may be deemed necessary, and in cold weather cover it with a material suitable for its protection.

14. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean, sharp-grained sand, and fine absorbent mineral dust.

15. *Asphalt.*—The asphalt shall be refined until homogenous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 17.

16. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

17. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

2. When a briquet of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box  $\frac{3}{4}$  inch deep by  $2\frac{1}{2}$  inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven, it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement. These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

18. *Sand.* The sand in use shall be free from mud, hard grained, and moderately sharp. On sifting, it should have at least 15 per cent of material that would be caught on a 40 mesh per inch screen, 25 per cent of material that will pass an 80 mesh to the inch screen, and 10 per cent at least must pass a 100 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased or diminished on streets of light traffic at the discretion of the engineer commissioner.

19. *Mineral dust.*—This shall be any fine hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

20. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportion by weight depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned; its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand, or the mixture of sand and stone dust, and the asphaltic cement, will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand in the required proportions and then mixed with the asphaltic cement at the required temperature, and in the proper proportion in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required in suitable tin boxes and cans; he shall have access to all branches of the works at any time, and shall have the right to obtain samples of all materials from the source of supply.

The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least 2½ inches by means of hot iron rakes in such manner as to give uniform and regular grade, so that, after having received its ultimate compression, it will have a net thickness of at least 1½ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by hand or steam rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam-roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than five hours for every 1,000 yards of surface. The street to be barricaded until the surface is cool. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

21. *Hauling and grading.*—(a.) The old material from the streets will be hauled to the nearest property yard or to such other point as the engineer commissioner may direct.

(b.) Lines and grades will be established by the engineer commissioner, and no work will be commenced until these are given.

(c.) Contractors are to be responsible for the proper preservation of all stakes, etc., set by the engineer for the determination of line or grade; should any such be disturbed through carelessness the cost of replacing same will be charged against the contractor at a fixed price of \$2 for each point, to be deducted from any money found due at final settlement.

(d.) All material excavated of whatsoever nature is the property of the District, and will be disposed of as the engineer commissioner shall direct.

(e.) The filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used, it will be removed at the cost of the contractor.

(f.) All measurements will be made in place, and payments made thereon.

(g.) Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" section deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

22. *Laying vitrified block.*—Vitrified-block gutters will ordinarily be 18 inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture, composed of 4 parts of the sand specified in paragraph 6 and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving blocks, to the depth of not less than one-half inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy hammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout, of neat natural cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will in that case extend to the bottom of the cross-ties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards, and must be hauled to the work at his expense.

### BITUMINOUS MACADAM ON CONCRETE BASE.

23. *Concrete base.*—The base is to conform in all respects to the specifications herein in relation to concrete base for sheet asphalt pavements.

24. **Paving materials.**—The paving materials shall be composed of crushed trap-rock screenings, concrete sand, and mineral dust in the following proportions: Trap-rock screenings, 2 parts; concrete sand, 1 part; and mineral dust, at least 5 per cent of the above aggregate, mixed with asphaltic cement. The various constituents of the mineral aggregate and asphalt cement shall be of the same kind and conform to District specifications for such materials for the year ending June 30, 1913, as follows:

25. **Trap rock.**—The trap rock shall be of a quality to be approved by the engineer, and shall be equal to that used by the District of Columbia for macadam roadways. The crushed stone will vary in size from 1 inch to screenings and shall be devoid of dust.

26. *Sand*.—The sand shall be hard grained and moderately sharp. On shifting it should have at least 25 per cent of material that would be caught on a 20-mesh per inch screen, and 5 per cent of material that will pass an 80 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

27. *Mineral dust.*—This shall be any fine, hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

28. *Asphalt*.—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 30.

29. *Petroleum oil*.—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics: Free from water and foreign matter, flash point not less than 300° F., distillate at 400° for 30 hours, less than 10 per cent. The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

30. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, cementitious, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F., it will not be softer than 350 penetration.

2. When a briquette of the bitumen having a minimum cross section of one square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box  $\frac{3}{4}$  inch deep by 2 $\frac{1}{2}$  inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

31. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportions by volume depending upon their character and the traffic on the street, and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 7 to 9 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned; its use will not be permitted; and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

32. *Laying asphalt surface.*—The stone and paving cement shall be heated separately to a temperature of about 300°, and shall be thoroughly mixed while hot by machinery. The proportion of paving cement shall be sufficient to thoroughly coat each particle of the aggregate, and the entire mixture shall be subject to the approval of the engineer. The mixture will be hauled while hot to the site of the work and shall be covered until deposited on the street. The temperature at the time of dumping shall not be less than 220°. The hot mixture shall be evenly spread with hot tools upon the base to such a thickness as will make a layer 2 inches in thickness after rolling. It shall then be rolled with a steam roller weighing not less than 1 ton per foot of tread of roller, until no further compression occurs. After the rolling of the asphaltic wearing surface has been completed there shall be spread over such surface a thin coating of asphaltic cement not to exceed on an average a quarter of a gallon to the square yard, of such consistency as shall be approved, which shall be thoroughly brushed into the wearing surface so as to fill all voids and smooth out any minor unevenness of the said surface. There shall then be spread over and rolled into this flush coat a thin layer of trap screenings, so far as practicable, devoid of dust, in size from three-eighths inch down, whose use shall be to the end of securing a gritty, no-slippery surface. The finished surface shall be free from lumps or depressions and shall be true to the required cross-section.

#### BITUMINOUS MACADAM ON BROKEN STONE BASE.

33. A surface coat of bituminous macadam complying in all respects to the specifications above for bituminous macadam for concrete base is to be laid on a base of broken stone or gravel. The base will be furnished by the District of Columbia, in place and rolled, ready for surfacing. The price bid will include supplying, mixing, placing, and rolling the bituminous surface.

## ADDITIONAL WORK.

34. The following specifications will cover incidental work which may be required of the contractor.

35. *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench in width will be 14 inches from the curb line toward the building line of the street, and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade with plumb face. Spalls of stone, hard burned brick, or other acceptable substance prepared for the purpose will be used to adjust the stone to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the stone has been properly placed and adjusted to the line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

36. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete, by the use of heavy wooden mauls. The face of the curb must be plumb and true to line, and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of blocks must be removed immediately after the curb is set.

37. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

38. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the disposition of it in the work, and no new concrete is required other than that sufficient to embed the stone at the back and adjust it to line and grade.

39. *General instructions.*—All curb will be furnished to the contractor at the District property yard, and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.



40. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices to be paid for this work will be as stated below:

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.
- (4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
- (5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.
- (6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (8) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.
- (9) Removing old rubble, cobble, flagging stone and brick, asphalt block, vitrified block or brick, etc., including hauling not to exceed 2 miles, 15 cents per square yard.
- (10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
- (12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work including haul, 12 cents per square yard.
- (14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
- (15) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.
- (16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.
- (17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, \$1.85 per cubic yard.
- (18) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.
- (19) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.
- (20) Laying or relaying vitrified or block on old concrete base, 60 cents per square yard.
- (21) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.
- (22) Cleaning old vitrified brick or block relaying, 25 cents per square yard.
- (23) Laying and relaying granite block, 75 cents per square yard.
- (24) Relaying cobble and rubble, 30 cents per square yard.
- (25) Repairing cement walks, \$1.50 cents per square yard.
- (26) Repairing brick walks, 25 cents per square yard.
- (27) Laying asphaltic or broken-stone base in place, \$3 per cubic yard.
- (28) Laying Portland cement concrete base in place, \$5 per cubic yard.
- (29) Adjusting manhole tops and basin covers to grade, \$1.50 cents each.
- (30) Adjusting water-valve casings to grade, \$3 each.
- (31) Adjusting electric-light or telephone manhole tops to grade, as follows:
  - (a) Size, 14 by 18 inches, \$1 each.
  - (b) Size, 36 by 36 inches, \$1.50 cents each.
  - (c) Size, 6 by 6 feet, \$4 each.
- (32) Laying asphalt top, 57 cents per cubic foot.
- (33) Laying asphaltic binder, 43 cents per cubic foot.

41. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

42. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the date of completion of each street hereunder. Ten per cent of the cost of the work as specified in paragraph 11



of the general stipulations will be retained and disposed of as otherwise provided for herein.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality and in accordance with these specifications. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance the work is to be inspected, and all imperfections, depressions and unevenness of surface, alignment and grade of curbs, sidewalks, etc., must be corrected where and to such extent as the engineer commissioner shall direct, upon which the engineer commissioner will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer.

43. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified, and insuring that the terms of the contract shall be strictly and faithfully performed. In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

44. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

45. Certificates of indebtedness against street railway companies will be given to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said companies in accordance with existing laws.

46. Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

47. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

## SPECIFICATIONS FOR LAYING ASPHALT-BLOCK PAVEMENTS.

1. *Work.*—The work to be done under this contract will consist of paving with asphalt block on a 6-inch concrete base, such streets, avenues, and roads in the District of Columbia, or parts thereof, or doing any portion of such work, as may be ordered in writing by the Commissioners of the District of Columbia, under appropriations for the fiscal year ending June 30, 1913. The estimated amount is 6,500 square yards.

2. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the roadbed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements and parkings, both public and private, to satisfactory condition.

3. *Asphalt blocks.*—(a) The size of the blocks will be 2 by 5 by 12 inches, and a variation of one-fourth of an inch from these dimensions will be sufficient ground for rejecting any block.

(b) All bids must be accompanied by a specimen block of the size and quality described in these specifications, labeled with the name of the bidder and locality of the factory. Bids not accompanied by specimen blocks will not be accepted. The

blocks will be tested for specific gravity, all blocks furnished must be equal in quality to the sample, as determined by the engineer commissioner.

(c) The blocks will be composed of asphalt, petroleum oil, and asphalt cement.

4. *Asphalt*.—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 50 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 25 parts of the flux to produce the asphalt cement described in paragraph 6.

5. *Petroleum oil*.—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

6. *Asphalt cement*.—The asphalt cement must be practically free from water and shall not at any time reach a temperature high enough to injure it.

If an asphalt is accepted that is readily affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid.

The asphalt cement must comply with the following requirements and must in any case be subject to the approval of the engineer commissioner.

(1) For the purpose of testing the asphalt cement having a penetration of 20° at 77° F. on the Dow penetration machine with a No. 2 needle, 100 grams, 5 seconds, its composition shall be so regulated by the addition, if necessary, of standard fine absorbent mineral dust, that it will contain 50 per cent of bitumen soluble in carbon bisulphide. This cement shall be so tough at 32° F. that a prism 1 centimeter square by 8 centimeters long between supports will not break under impact at center with less than 15 centimeters drop of a 25 gram weight striking a vertical plunger having a horizontal face of one centimeter by one millimeter resting on the asphalt prism.

(2) Degree of penetration of the asphalt cement to be fixed by the engineer commissioner.

(3) When the cement is heated in an open tin box  $\frac{1}{4}$  inch deep by 2 $\frac{1}{2}$  inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

7. *Mineral dust*.—This shall be any fine hydraulic cement or lime stone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

8. *Crushed stone*.—The crushed stone in use shall be from any tough, hard rock, and shall not contain any appreciable amount of soft ingredients, such as mica, soft sandstone, or shale. On sifting not more than 3 per cent shall be retained on a 3 mesh per inch screen, at least 40 per cent must be retained on 20 mesh per inch screen, and at least 12 per cent must pass a 100 mesh per inch screen. If the stone does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

9. *Asphalt-block mixture*.—The materials complying with the above specifications shall be mixed in proportions by weight, depending upon their character, which will be determined by the engineer commissioner, but in any mixture the percentage of bitumen soluble in carbon bisulphide shall not exceed the limits, 6 to 9 per cent.

If the proportions of the mixture are varied in any manner from those prescribed, the blocks will not be accepted.

The stone and dust and the asphaltic cement must be mixed while hot, and the mixture must be compressed into blocks by methods meeting with the approval of the engineer commissioner.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required, in suitable tin boxes and cans, and he shall have access to all branches of the works at all times.

Blocks are to be manufactured with a total minimum compression of not less than 360,000 pounds per block, press pressure.

10. *Grading and subgrade.*—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling, with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

13. *Concrete base.*—The space over which the pavement is laid will be excavated to the proper depth below the surface of the finished pavement, and trimmed, filled, and rolled as described for gravel base. Upon this bed will be laid a base of concrete 6 inches thick, when compacted, and made of the following materials by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel. Broken stone, run of the crusher, may be substituted for part or all of the gravel, at the option of the contractor.

14. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia, and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements, before it can be used on the streets, and if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefor from any moneys found to be due to said contractor by the District.

15. *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

16. *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

17. *Gravel.*—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions, and shall run from that down to pea size, well graduated.

18. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

19. *Platforms.*—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work, and kept there until used.

20. *Mixing.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned over and

mixed with shovels by skilled workmen not less than 6 times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels not less than four times and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring one barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with one barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

21. *Setting*.—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels so as to give the requisite thickness after being tamped and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

22. *Method of laying blocks on concrete base*.—The 2-inch blocks are to be laid on this concrete base in a paving bed of mortar, made of 1 part of Portland cement and 4 parts sand, at least one-half inch thick, and a much thicker as may be necessary, due to inequalities in surface of concrete base so that the blocks when tamped in place will be securely embedded in the mortar and wholly supported by it, and will present a uniform surface with close joints and proper grade and crown. The pavement will then be thoroughly grouted with a thin, easily flowing grout of 1 part neat Portland cement and 1 part fine sand.

23. *Hauling and grading*—

(a) The old material from the streets will be hauled to the nearest property yard or to such other point as the engineer commissioner may direct.

(b) Lines and grades will be established by the engineer commissioner, and no work will be commenced until these are given.

(c) Contractors are to be responsible for the proper preservation of all stakes, etc., set by the engineer for the determination of line or grade; should any such be disturbed through carelessness the cost of replacing same will be charged against the contractor at a fixed price of \$2 for each point, to be deducted from the money found due at final settlement.

(d) All material excavated, of whatsoever nature, is the property of the District and will be disposed of as the engineer commissioner shall direct.

(e) The filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used it will be removed at the cost of the contractor.

(f) All measurements will be made in place, and payments made thereon.

(g) Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

24. *Setting 6 by 20 inch granite and bluestone curb*.—This curb will be set in the following manner: A trench parallel to the curb line having a depth of 24 inches below the top of the curb when set and 20 inches wide will be excavated to receive the curb and its gravel bed. The dimensions of the trench, in width, will be 14 inches from the curb line toward the building line of the street and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade, with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance prepared for the purpose will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

25. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line having a depth of 15 inches below the top of the curb when set and 18 inches wide will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade, the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-brick gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

26. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also, the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

27. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to imbed the stone at the back and adjust it to line and grade.

28. *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work. Any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

29. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below.

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.
- (4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
- (5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.
- (6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (8) Dressing, jointing, and cutting curb, etc. (stonecutters' time) including setting-up labor, 65 cents per hour.
- (9) Removing old rubble, cobble, flagging stone and brick, asphalt block, vitrified block or brick, etc., including hauling not to exceed 2 miles, 15 cents per square yard.
- (10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.

(14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.

(15) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, \$1.85 per cubic yard.

(18) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.

(19) Hauling excavated material, per 100 feet over first 1,000 feet, 1 cent per cubic yard.

(20) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.

(21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(22) Laying and relaying vitrified brick or block on gravel base, 40 cents per square yard.

(23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(24) Laying and relaying granite block, 75 cents per square yard.

(25) Relaying cobble and rubble, 30 cents per square yard.

(26) Repairing cement walks, \$1.50 per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.

(29) Paying Portland cement concrete base in place, \$5 per cubic yard.

(30) Adjusting man-hole tops and basin-covers to grade, \$1.50 each.

(31) Adjusting water-valve casings to grade, \$3 each.

(32) Adjusting electric-light or telephone man-hole tops to grade, as follows:

(a) Size, 14 by 18 inches, \$1 each.

(b) Size, 36 by 36 inches, \$1.50 each.

(c) Size, 6 by 6 feet, \$4 each.

30. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

31. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the same as the date of completion of each street hereunder. Ten per centum of the cost of this work will be retained as prescribed in paragraph 11 of the general stipulations and disposed of as provided for by law.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct. Upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer.

32. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified, and insuring that the terms of the contract shall be strictly and faithfully performed. In the event of the contractor failing to make such necessary repairs after notice to do so the com-

missioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

33. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

34. Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is done.

35. Certificates of indebtedness against street railway companies will be given to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said companies in accordance with existing laws.

36. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

### SPECIFICATIONS FOR RESURFACING AND REPAIRING ASPHALT AND COAL-TAR PAVEMENTS.

1. *Work.*—The work to be done under this proposal and contract includes the renewal or resurfacing of such asphalt and coal-tar pavements as may be ordered from time to time by the engineer commissioner or his assistants, and the renewal of the surface of cuts made for tapping sewers and pipes, or for other purposes, and generally all patching and miscellaneous work necessary to keep the above-mentioned pavements in good condition for travel, including the repairs of sidewalks and other pavements disturbed in doing the above work or changed to conform to new grades, if so ordered.

2. *Amount of work.*—The amount of work is dependent upon the annual appropriation for "Repair to streets," which was \$400,000 for the fiscal year ending June 30, 1911, and is \$425,000 for the fiscal year ending June 30, 1912. For the purpose of canvassing bids the following approximate estimate of the amount of work to be done during each fiscal year of this contract will be used (material for street railway repairs not estimated, and will not be considered in the canvass of bids):

Standard asphalt pavement on 6-inch concrete base.....	square yards..	70,000
Standard asphalt surface (2½-inches before compression).....	do.....	35,000
Standard asphalt surface, cubic-foot measurement (heater method), cubic feet.....	do.....	40,000
Standard asphalt surface, cubic-foot measurement (repairs and miscellaneous work, cuts, etc.).....	cubic feet..	125,000
Asphalt binder, cubic-foot measurement, in connection with resurfacing, cubic feet.....	do.....	60,000
Asphalt binder, cubic-foot measurement, for repairs and miscellaneous work, cuts, etc.....	cubic feet..	95,000

3. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the road-bed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such pre-roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work, he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

4. *Old material.*—The amount of old material to be cut and removed each day shall be decided by the engineer commissioner or his agents. Should the contractor remove more than ordered, he must replace it with new material without cost to the District. No payment will be made for any coal-tar or asphalt surface removed in making repairs, and the material thus removed will become the property of the contractor.



tractor, to be disposed of by him. Any coal-tar or asphalt surface and binder removed from concrete base in resurfacing work will be paid for at the price named in paragraph 41 of the specifications, and such material will become the property of the contractor and be disposed of by him unless the engineer commissioner should elect to retain title to any of this material, in which event the contractor will for the price named deliver the same to a distance not to exceed 2 miles from the site of the work. Where the old pavement, base and surface, is removed for the purpose of laying a new pavement the material will be the property of the District and the work will be paid for at the prices named in paragraph 41 of the specifications. Granite blocks, cobble, old curb, etc., must be removed to the nearest property yard or to such place within the section of the city being repaired as the engineer commissioner may direct.

#### ASPHALT PAVEMENTS.

All asphalt work will be done in accordance with the following specifications:

5. *Grading and subgrade.*—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling, with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

6. *Concrete base.*—Upon the bed thus prepared there will be laid a 6-inch foundation of concrete as directed, made of the following materials by volume: One part Portland cement, 3 parts sand, 7 parts gravel.

Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

7. *Cement.*—The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia. No brand of cement will be accepted for use which has not established itself as a high-grade Portland cement and given satisfaction for three or more years in use under climatic or other conditions of exposure of at least equal severity as those of the work proposed. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time, not exceeding 28 days, as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 10 days after notifying the inspector of asphalt and cements, before it can be used on the streets, and if deemed advisable by the engineer commissioner, 28 days. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stocks on hand at its warehouse and charge said contractor with the cost of same at the rate of \$2 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefrom from any moneys found to be due to said contractor by the District.

8. *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

9. *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

10. *Gravel.*—Gravel shall be clean washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions and shall run from that down to pea size, well graduated.

11. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.



12. *Platforms.*—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work and kept there until used.

13. *Mixing.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor, the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring 1 barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with 1 barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery, the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

14. *Setting.*—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels, so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than 3 days old must not be allowed unless planks are laid.

15. *Binder.*—The binder course shall be composed of clean broken stone, equal in quality to the stone for the base, and passing a  $1\frac{1}{4}$ -inch screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than  $1\frac{1}{2}$  inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will be at least  $1\frac{1}{2}$  inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond, it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it and, when ordered by the engineer, shall sprinkle it in warm weather between the hours of sunset and sunrise as often as may be deemed necessary and in cold weather cover it with a material suitable for its protection.

16. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean sharp-grained sand, and fine absorbent mineral dust.

17. *Asphalt.*—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 19.

18. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

19. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner, no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving, under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely, in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

2. When a briquet of the pure bitumen, having a minimum cross section of 1 square centimeter, is tested for ductility at 77° F., the bitumen must stretch to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box,  $\frac{3}{4}$  inch deep by 2 $\frac{1}{2}$  inches in diameter, at a temperature of 300° F. for 18 hours in a hot-air oven, it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles, so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

20. *Sand.*—The sand in use shall be free from mud, hard grained, and moderately sharp. On sifting it should have at least 15 per cent of material that would be caught on a 40 mesh per inch screen, 25 per cent of material that will pass an 80 mesh to the inch screen, and 10 per cent at least must pass a 100 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased or diminished on streets of light traffic at the discretion of the engineer commissioner.

21. *Mineral dust.*—This shall be any fine hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

22. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportion by weight, depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified the mixture will be condemned; its use will not be permitted; and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand, or the mixture of sand and stone dust, and the asphaltic cement will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand, in the required proportions, and then mixed with the asphaltic cement, at the required temperature and in the proper proportion, in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required, in suitable tin boxes

and cans; he shall have access to all branches of the works at any time and shall have the right to obtain samples of all materials from the source of supply.

The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least 2½ inches by means of hot iron rakes, in such manner as to give uniform and regular grade, so that, after having received its ultimate compression, it will have a net thickness of at least 1½ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by hand or steam rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than 5 hours for every 1,000 yards of surface. The street to be barricaded until the surface is cool. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

23. *Asphaltic base.*—Asphaltic base will be composed of clean broken stone, free from spalls, that will pass through a 2-inch ring, well rammed, and rolled with a steam roller weighing not less than 5 tons. The rolling will be continued until the stone ceases to creep before the roller and until it is evident that the final compression has been reached. It will then be thoroughly coated with asphaltic paving cement of approved quality, as directed.

#### RESURFACING OVER ASPHALT AND COAL-TAR PAVEMENTS.

24. The above specifications shall also apply, as far as practicable, to all work of resurfacing. Where the binder coat can not be made of uniform thickness, it will be paid for by the cubic foot. The engineer commissioner will decide which method of payment will be adopted in each case.

#### RESURFACING BY THE HEATER METHOD.

25. The engineer commissioner may order certain streets resurfaced by what is known as the Lutz asphalt heater method, or a similar device satisfactory to the engineer commissioner, as follows:

The old surface of the street shall be heated and softened by means of this heater, to the satisfaction of the engineer commissioner or his authorized agent, and so much of the old asphalt topping so softened shall be removed as may be directed. Immediately upon the surface exposed by the removal of the aforesaid old top there shall be deposited new asphaltic top material and immediately the same shall be spread by means of hot shovels and rakes to such an amount and of such thickness as will not be less than 1½ inches before compression, as may be directed by the district inspector assigned to the work, the intention being to cover the new surface while still hot with hot new material. This new material so spread shall without delay be rolled with hand or steam rollers and finally finished, by means of a steam roller of not less than 5 tons weight, to a firm condition as to compression and to a regular section in a manner entirely similar to that of new construction. It is the intent of this specification that new work shall be joined to old in all cases with a hot joint, and the contractor is expected to make every reasonable effort to secure this result. Successive heatings shall be made when necessary, as above described, until the entire street, or such portions thereof as indicated, has been covered. This class of resurfacing will not be considered new work, and therefore no retent will be held on the amount paid for this class of work. The same will be paid for by the cubic feet of material furnished, and the price bid on material for this class of work will include all incidental work in connection therewith, such as cutting out old material where necessary and removing same, also removing old heated material, cleaning up, etc., as in the case of ordinary repairs. In the event that asphaltic binder is required in connection with this work it will be paid for by the cubic foot at the price named in Item 4 of the contract prices herein for binder furnished in connection with resurfacing work.

#### ORDINARY REPAIRS.

26. The work to be done under this head includes the repairing of all asphalt and coal-tar pavements where defective, due to wear or accident; the repairs of all cuts, such as those made for tapping sewers, water pipes, etc.; and generally all patching and miscellaneous work necessary to keep the pavements in good condition for travel during the contract period. The pavement must be repaired with materials as described above.

27. The repairs shall be made at such times and places and in such manner as may be directed, and when deemed necessary on certain streets, between the hours of 8 p. m. and 8 a. m. All old material shall be cut out and removed at the contractor's expense, and in the case of undercuts any overhanging portion shall be removed.

28. Except in special cases, the base of the pavement over any cuts will be laid by the District, and the surface only by the contractor. The engineer commissioner may, however, call upon the contractor to lay the base wherever he may deem it advisable.

29. The holes cut out shall be cleaned and the edges painted with hot paving cement of such quality as may be acceptable to the engineer commissioner.

30. Barricades of a suitable form to prevent traffic over recently laid work shall be provided and kept in place until the surface has hardened sufficiently to withstand pressure. These barricades and their use must be subject to the approval of the engineer commissioner.

31. Work in repairing over plumber, electric light, and similar cuts will be done immediately on receipt of written order from the engineer commissioner.

32. Any work of repairs to pavement for which street railway companies are responsible, and which may be ordered under this contract by the proper authority, shall conform to these specifications and be paid for at the prices named in items 7 and 8 of the contract prices herein. In case any railway company shall fail or refuse to pay the sum due from said company in respect of work done by or under the orders of the proper officials of the District of Columbia, certificate of indebtedness against said railway company will be issued to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said company in accordance with existing laws.

33. *Measurement.*—Asphaltic top and asphaltic binder specified herein to be paid for by the cubic foot shall be measured on the basis of the box or measure used for measuring at the plant; the sand, in the case of top mixture; and the stone in the case of binder mixture. In the case of asphaltic top mixture the actual net contents of the box as filled with sand will determine the amount of resultant top mixture to be paid for, and in the case of binder stone 92 per cent of the actual net contents of the box as filled with binder stone will determine the amount of resultant binder to be paid for, and payments on these bases will be made. This rule of measurement shall also apply to work done under the heater method.

#### ADDITIONAL WORK.

34. The following specifications will cover incidental work which may be required of the contractor in connection with the work of renewal, resurfacing, and repairs:

35. *Laying vitrified block.*—Vitrified-block gutters will ordinarily be 18 inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture composed of 4 parts of the sand specified in paragraph 8, and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving blocks, to the depth of not less than one-half inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy hammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout of neat Portland cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will in that case extend to the bottom of the cross-ties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards, and must be hauled to the work at his expense.

36. *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench in width will be 14 inches from the

curb line toward the building line of the street and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance prepared for the purpose will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it, without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

37. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet-asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

38. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

39. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to embed the stone and back and adjust it to line and grade.

40. *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of, or damaged or broken through careless or unskilled handling, will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

41. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

- (4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
- (5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.
- (6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (8) Dressing, jointing, and cutting curb, etc. (stonecutter's time) including setting-up labor, 65 cents per hour.
- (9) Removing old rubble, cobble, flagging stone, and brick, asphalt block, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.
- (10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
- (12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.
- (14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
- (15) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.
- (16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.
- (17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, \$1.85 per cubic yard.
- (18) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.
- (19) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.
- (20) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.
- (21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.
- (22) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.
- (23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.
- (24) Laying and relaying granite block, 75 cents per square yard.
- (25) Relaying cobble and rubble, 30 cents per square yard.
- (26) Repairing cement walks, \$1.50 per square yard.
- (27) Repairing brick walks, 25 cents per square yard.
- (28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.
- (29) Laying Portland cement concrete base in place, \$5 per cubic yard.
- (30) Adjusting manhole tops and basin covers to grade, \$1.50 cents each.
- (31) Adjusting water-valve casings to grade, \$3 each.
- (32) Adjusting electric-light or telephone manhole tops to grade, as follows:
  - (a) Size 14 by 18 inches, \$1 each.
  - (b) Size 36 by 36 inches, \$1.50 each.
  - (c) Size 6 by 6 feet, \$4 each.

42. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

43. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the same as that of the completion of the work as indicated on the final voucher for each street. Ten per centum of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on ordinary repairs (minor repairs).

It is further expressly understood and agreed that if any of the pavements laid should for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer commissioner.

44. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified. In the event of the contractor failing to make such necessary repairs after notice to do so, the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

45. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

46. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumber's cuts or other work done by the permission of the commissioners before the work is begun.

47. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

### SPECIFICATIONS FOR LAYING CEMENT SIDEWALKS.

1. *Classes A and B.*—Work under class A will consist of all large work located on streets, avenues, places, etc., within the limits of the city of Washington (including Georgetown or West Washington), and all work on streets, avenues, places, etc., beyond said limits where the roadways are paved. Work under class B will consist of all large work located on streets, avenues, places, etc., outside the limits of the city of Washington, as above, where the roadways are not paved, and of all small work wherever located. For classification for purposes of payment under this contract any item of work which exceeds 100 square yards will be rated and paid for as "large work," items of 100 square yards or less being rated at "small work." The aggregate of the item will be the determining consideration, since it may consist of two or more detached pieces in the same vicinity. Any questions as to classification under this paragraph will be decided by the engineer commissioner.

2. *Grading.*—The contractor is to make such cutting and filling as may be necessary to bring the foundation, when compacted, to the level of 5 inches below the surface of the finished pavement. Grading, either cut or fill, to the needed depth, not exceeding 1 foot on the average for each separate piece of work, and including the area of tree spaces, either continuous or interrupted, must be done without additional or extra charge, inclusive of removal and haul to designated property yard of all sidewalk material between the curb line and the back of the new work, whether the old sidewalk is wholly replaced by the new cement part or not.

Grading in excess of the 1 foot average depth and removal of old cement or asphalt sidewalk will be paid for as additional work at prices stated herein.

Material for filling must be suitable for the purpose, and satisfactory to the engineer, and must be placed in layers and compacted for making good foundation, as required by him.

In case of excavation, any unsuitable or objectionable material in the bed, as determined by the engineer, is to be wholly removed and the spaces filled with broken stone or other suitable material satisfactory to him.

The contractor is to trim the bed so as to make it parallel to the surface of the finished pavement and thoroughly compact the bed by rolling or ramming without extra pay.

On the bed thus prepared will be laid, after compacting, 4 inches of cement concrete and 1 inch of cement mortar covered by a thin, dry surface coat all made of the materials and in the manner hereafter described.

3. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia, and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government, specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly



protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner.

4. *Sand*.—The sand used shall be clean and sharp, from fine to coarse, free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter, but may show when shaken with water and after subsidence not more than 3 per cent by volume of silt or loam. Sand used for surface layer must be screened on line of work; screen to be used for this purpose to be designated by the engineer. Sand stored at the work shall, when required, be dumped on boards or other suitable platform and kept as clean as when delivered.

5. *Gravel*.—The gravel shall be from small to medium size and as good in quality as the best Potomac River washed gravel. The gravel shall be free from dust, dirt, chips, leaves, and other foreign or objectionable matter, and when required shall be dumped on boards and cared for as provided for sand in the preceding paragraph.

6. *Mortar and concrete*.—The mortar shall be composed of the cement and sand in the proportion of 1 to 2, by volume, thoroughly mixed dry; a sufficient quantity of water will be added afterwards by fine sprinkling to form, upon remixing, a stiff plastic paste. The proportions are intended to secure a mortar in which every particle of sand is enveloped by cement and all voids in the gravel filled with mortar, and this result must be obtained to the satisfaction of the engineer. If the mixing be by hand, it shall be done on a water-tight platform with tight raised edges, and the cement spread first. No batch shall contain more than 1 barrel of cement.

The mixing shall be done by the use of shovels, hoes, and rakes until a thoroughly uniform mortar of proper consistency as above described is secured.

7. *Concrete*.—To the mortar, made as above directed, shall be added 5 parts by volume of the specified gravel which shall have been thoroughly drenched with water just before it is added to the mortar. The drenching shall not be done in the barrow, nor otherwise to permit the addition of free water to the mortar. Each batch of concrete shall be thoroughly mixed until each piece of gravel is wholly coated with mortar and in a manner satisfactory to the engineer. If the mixing be by hand, it shall be done on a water-tight platform, with tight raised edges, and in the mixing the gravel shall be first spread over the mortar. The concrete immediately after mixing will be spread upon the foundation so that the mortar shall remain evenly incorporated with the gravel, and then thoroughly compacted by ramming. The slab or flag divisions are then to be marked off to the size and markings cut 3 inches deep. The space made by the cutting tool shall be immediately filled with dry sand and well rammed. Should the contractor so desire, he will be permitted to substitute broken stone for the gravel used in concrete. Such stone should be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter and may be the run of the crusher, containing not over 1 per cent of material passing a No. 70 sieve. It shall be free from foreign substances, as provided for gravel.

8. *Mortar and surface*.—Mortar for the surface layer shall be made of the specified cement and sand, mixed in the manner as for mortar for concrete, but in the proportion of 2 to 3, by volume. The mortar shall be spread while fresh upon the concrete base while the latter is still soft and adhesive and before it shall have reached its first set, in such quantity that after thorough manipulation it shall be 1 inch in thickness. It is then to be leveled off and beaten with wooden battens, so as to break any air cells and make the surfacing perfectly solid and at the true grade. No pavement marked by sand which has been spread over it for protection will be accepted.

9. *Dry coat*.—A coating of dry cement and fine sand in equal proportions, by volume, and such part and kind of coloring matter as the engineer may direct, thoroughly mixed, is then to be floated into the layer; and by a skillful use of tools the surface is to be made smooth. The joints of the blocks will then be made to a depth of one-half inch immediately over the joints in the concrete base and the blocks brought to a true line and grade and finished without marginal line with trowels to the satisfaction of the engineer. The trowel finish above described will be the rule of the work, but in such cases as may require it for the sake of uniformity, with adjacent pavements or other sufficient reasons the use of marginal lines and a rolled finish may be required. The decision as to the finish to be used will be made by the engineer.

Any lack of compaction between the concrete and mortar layers shall be sufficient reason for requiring entire removal and the substitution of new and satisfactory work.

10. *Protection of work*.—The pavement is to be kept moist, protected against the weather, and guarded against foot travel until it has set. Care shall be taken at all times not to interfere with business or travel more than is absolutely necessary for faithful execution of the work. Free ingress and egress from the street to entrances to premises fronting on the sidewalk shall be provided for at all times; and during the



time that travel is closed the contractor shall provide a temporary walk and keep it in good condition, safe for pedestrians and easy of access from adjoining walks or roadways. The contractor will not be allowed to obstruct private driveways or approaches, or to dig up or occupy the streets by material more than is absolutely necessary for the prosecution of the work. Special care will be taken to inconvenience the public as little as possible. The contractor will be held responsible for all injury done to the work in any way until it has been accepted and measured by the engineer.

11. *Driveways.*—Driveways shall be laid the same as sidewalks, except that the surface shall be divided into small squares, as in K Street NW., near Connecticut Avenue. The plan of driveways shall be as directed by the engineer.

12. *Tree spaces.*—Tree spaces will be left as directed. These spaces and also other edges of the work not abutting against curb, poles, or straight lines of parking, terrace, or coping, will be outlined by planed boards of sound pine, 5 inches deep, set on edge to true line and with top edge even with the pavement surface.

The edges of the new pavement not joining a curb or coping are to be clearly cut down on a true line 1 inch below the finished surface. The edges adjacent to interrupted tree spaces are to be plaster finished. The area of the tree space, either continuous or interrupted, is to be filled with earth up to the level of the pavement.

13. *Plumbing.*—All preliminary plumbing work will be done by the District. The contractor will be held responsible for all plumbing appurtenances within the limits of the finished sidewalk being at its grade and for any damage or obstruction thereto due to his operation.

14. *Cleaning work.*—Before acceptance of the work it will be cleaned and all débris and unused material removed. No crumbling or uneven edges of the sidewalk will be allowed to remain. Pine strips at edges of concrete will not be removed before 48 hours after the pavement is laid.

15. *Inspection of work.*—The engineer will appoint an inspector to see that each piece of the work, including curb work, is graded and laid according to specifications and directions. The District will not pay for any work done during the absence of the inspector.

16. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile or fraction thereof.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, Class A, 25 cents per linear foot.
- (4) Hauling from District property yard and setting 6 by 20 inch curb, Class B, 28 cents per linear foot.
- (5) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
- (6) Hauling from District property yard and setting 8 by 8 inch curb, class A, 35 cents per linear foot.
- (7) Hauling from District property yard and setting 8 by 8 inch curb, class B, 38 cents per linear foot.
- (8) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (9) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (10) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.
- (11) Removing old rubble, cobble, agging stone and brick, asphalt block, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.
- (12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (13) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
- (14) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (15) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
- (16) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.
- (17) Removing old coal-tar and bituminous pavement or base and hauling not to exceed 1,000 feet, \$1 per cubic yard.
- (18) Removing old asphalt and cement sidewalk pavement and hauling same not to exceed 1,000 feet, \$1 per cubic yard.
- (19) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.

(20) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.

(21) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.

(22) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(23) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.

(24) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(25) Laying and relaying granite block, 75 cents per square yard.

(26) Relaying cobble and rubble, 30 cents per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.

(29) Laying Portland cement concrete base in place, \$5 per cubic yard.

(30) Adjusting manhole tops and basin covers to grade, \$1.50 each.

(31) Adjusting water-valve casings to grade, \$3 each.

(32) Adjusting electric-light or telephone manhole tops to grade as follows:

(a) Size 14 by 18 inches, \$1 each.

(b) Size 36 by 36 inches, \$1.50 each.

(c) Size 6 by 6 feet, \$4 each.

(d) Size 6 by 6 feet manholes, with 36 by 36 inch covers set on I beams in concrete, \$7 each.

The work of repairing cuts in cement walks, which has in recent years been done under these specifications, will be otherwise arranged for and will not be done by this contractor.

The repaving of all roadway pavements necessarily disturbed in setting or resetting curb will be done by the District without cost to the contractor.

The setting and resetting of the curb shall be done according to current District of Columbia specifications for such work.

The old curb may be removed and reset to grade and line, or the old curb may be straightened and leveled without removing it from place, as required by the engineer.

17. Existing brick walks abutting the ends of new cement walks are to be relaid, if necessary, without cost to the District, in such manner as to make them conform to the grade, etc., of the new walks in a manner satisfactory to the engineer.

18. *Amount of work.*—The work to be done under this contract consists in laying cement sidewalks in such places and in such order as may be directed by the commissioners under appropriations for the fiscal year ending June 30, 1913. The amount of work to be done under this contract can not be stated with any precision, but as an indication of what is anticipated the amount of the contractor's bond will be determined on the basis of 70,000 square yards. No guarantee is given that the quantity here stated will be equal or may not be exceeded. The bids will be classified and award of contract based on 50,000 square yards of class A, and 20,000 square yards of class B.

19. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer arising out of any modification of these specifications that may appear necessary, and for this he will be paid at current rates for work of similar character; or if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent, the contractor shall have no claim for compensation for extra work unless the same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

20. *Guaranty.*—All work done under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from the date of its acceptance by the commissioners. This date shall be the same as that of the final voucher in which the work is an item. Ten per cent of the cost as specified under paragraph 11 of the general stipulations will be retained and disposed of as provided for by law.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force.

21. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purposes provided by law and for the purpose of maintaining the work in repair and making good any defects discovered during the period specified.

In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require the contractor and his

sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

22. *Cuts*.—Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

### SPECIFICATIONS FOR TRUNK SEWERS.

2. *Bids*.—The contractor shall, for the price or prices bid, do all the work prescribed in these specifications; make the requisite excavations for building the sewer and the appertaining structures and connections; shall do all ditching, diking, pumping, bailing, and draining, all sheeting, bracing, and shoring; shall make all provisions necessary to maintain and protect adjacent buildings, fences, trees, gas pipes, water courses, conduits, culverts, sewers, railways, electric lines, and other structures, and shall repair all damages to the same which may result from his operations; shall provide all bridges, fences, or other means of maintaining and protecting travel on intercepted streets, roads, and railroads, and on streets or roads in which the trenches are excavated, after giving due notice to parties affected thereby; shall maintain the same in good and safe condition so long as may be necessary, and shall then remove such temporary expedients and restore such ways to their proper condition; shall provide watchmen, red lights, fences, and all other precautionary measures necessary to the protection of persons and property; shall provide all necessary centers, molds, and forms; shall construct all foundations, all brick, concrete, stone, and timber work; shall set in place all ironwork, and refill all trenches; shall furnish all materials (except those specially mentioned in paragraph 13), and all tools, implements, labor, and transportation required to build and put the sewer in complete working order; and shall do each and all to the satisfaction of the engineer.

The prices bid are to include the cost of the removal of and delay or damages occasioned by trees, roots, timber, or masonry structures, or other obstacles (whether shown on the plans or not) except rock.

For lumber in trench no payment shall be allowed, unless the same shall be specifically directed by the engineer prior to the refilling of the trench. The contractor ordinarily will use his judgment about leaving bracing lumber in place, but shall be, in all cases, responsible for any injury which may result to the sewer or to adjacent pavements, structures, water, gas, or other conduits by the removal of bracing, sheeting, or shoring.

3. *Drawings*.—The drawings which illustrate the work to be performed and which show the location, shapes, dimensions, and materials of the sewer to be constructed are on file in the engineer department. All work executed under this contract must conform with these drawings.

Should the position of pipes and other underground objects be found to differ from that indicated on the drawings, or if it shall be found necessary to modify the lines, grades, or positions, the contractor shall have no claim for extra compensation on that account.

4. *Order of work*.—The work shall be prosecuted in such order as the engineer shall direct. He shall determine whether the conditions are favorable for working, and may suspend the work or any portion of it whenever, in his opinion, the conditions are such as will not insure first-class construction.

5. *Street occupancy and traffic*.—The operations of the sewer contractor must be so conducted that traffic upon steam and street railways and ordinary street traffic may be maintained. All material excavated must be removed from the street or deposited as back filling upon completed work.

6. *Pavements*.—All pavements disturbed in doing sewer work for the width of the trenches, as defined in section 8 of these specifications, will be relaid by the commissioners. The contractor shall, without cost to the District, haul all cobble, rubble, bricks, blocks, and tiles taken up by him to a property yard to be designated by the engineer and take receipt therefor. Macadam, hydraulic base, and sheet pavement material removed shall be piled in suitable places along the line of the work so as not to cause unnecessary obstruction of any kind, and during the progress of the work shall be guarded by the contractor against misappropriation. Whenever so ordered by the engineer the contractor shall haul this material to a property yard to be designated by the engineer. No paving material of any kind removed in making excavation shall be used or appropriated by the contractor without written permission from the engineer.

If any pavement be injured by the contractor outside the limits prescribed by the trenches, the cost of restoring such excess shall be charged against him and deducted from any amount found due him. He will maintain the surface over the line of the trench up to the street grade, with the best material obtainable from the excavation, until such time as the pavement is relaid. The cost of subsequent repairs of all pavements relaid over or adjacent to sewer trenches on account of sewer work, or of any work made necessary, within the period of one year, for which the sewer and their appurtenances are guaranteed, by settlement of the back filling of the trenches will be charged against the 10 per centum retained and invested as provided in paragraph 9 of the instruction to bidders.

7. *Private property.*—Care shall be taken not to move, without the consent of the person owning or controlling them, any trees, fences, water, or gas pipes, sewers, drains, conduits, poles, or wires for electrical purposes, railways, or other structures, and in crossing or working near them they shall be sustained securely in place until the work is completed and shall be so treated as to render their condition as efficient and permanent as before.

In sewer construction along a right of way through public or private property the contractor shall so conduct his work as not to damage said property, and so as to interfere with its ordinary use as little as possible; he shall, upon completion of the sewer, restore the surface as nearly as possible to the condition in which he found it. No material shall be used or removed from the premises without the consent of the owner or responsible party in charge of the property.

8. *Measurements.*—Measurements of work shall be made as follows:

Length: The length of sewer paid for by length, and the length of excavation shall be the whole length of the completed sewer without deduction for the space occupied by manholes.

Width: The width of the trench at any cross-section shall be considered as equal to the greatest horizontal diameter of the sewer at that cross-section, including the walls thereof, with 9 inches added thereto.

Depth: The depth at any cross-section shall be considered as equal to the mean depth from the surface to the outside bottom of the sewer at that section.

In submitting proposals bidders will be guided by the profiles given upon the drawings. These are approximate and any variance therefrom shall not be the basis of any claim for compensation above that provided for in the contract rates.

9. *Trenches.*—The ground shall be excavated in open trenches to such width and depth as may be necessary for proper sewer construction. If, however, in the judgment of the engineer, it is deemed advisable, special permission may be given for the construction of portions of the work in tunnel, in which case excavation will be allowed as if construction were in open trench. But at any time during such construction the engineer may direct the excavation to be made in open trench.

The portion of the trench below the springing line of the sewer shall be excavated to conform to the external form and dimensions of the same. If the character of the ground met with in excavating is such that the external form of the sewer can not be preserved, the excavation shall be made to conform as nearly as possible to the external shape and dimensions of the sewer, and the space between the external sewer lines and the bottom and sides of the excavation as made, for a width equal to the greatest outside horizontal diameter of the sewer, shall be filled with hydraulic cement, concrete, or brick masonry, as directed.

If the material found in the sewer trench be, in the opinion of the engineer, unsuitable for a foundation, upon receipt of a written order it shall be removed by the contractor to such depth and width as may be directed, and suitable material shall be deposited in its place. This additional excavation and deposited material will be paid for as extra work.

The utmost care shall be taken to spare the roots of shade trees, and to protect trees and shrubbery in public parks adjacent to line of work from injury. Also care must be taken to avoid unnecessary damages to park surfaces and roadways during construction.

Whenever it is necessary to intercept work near, or in any way interfere with any public or house sewer, drainpipe, catch basin, culvert, or other similar structure, the contractor shall maintain the same in working order, and shall repair and make good any damage done to or by any of them during the progress of the work.

During construction, permission may be secured to substitute for any sewer in use which is affected by the work hereby contracted for a drain upon an approved location of equal capacity and of substantial construction, subject in all particulars to the approval of the engineer.

10. *Rock.*—Only such ledge or rock as in the opinion of the engineer requires blasting for its removal, or boulders of one-half cubic yard or more in volume which are

removed from the trench, will be estimated as rock excavation. Before beginning rock excavation the contractor must procure a written order from the engineer. All excavated material shall be considered and classed as ordinary excavation, except rock removed by special orders as above. Indurated gravel, loose or disintegrated rock, and materials of like character, in the opinion of the engineer, will not be classed as rock.

For rock excavated from trench \$3 per cubic yard will be allowed the contractor and excavation classified as rock will not be included also as ordinary excavation.

11. *Blasting*.—Before blasting the contractor must procure a written order from the engineer.

Blasts shall be covered with heavy timbers chained together. Caps or other explosives shall in no case be kept in the same place in which dynamite or other explosives are stored; and, in general, the precaution against accidents from blasting shall be entirely satisfactory to the engineer. The contractor shall be liable for all damages to persons or property caused by blasts or explosives.

12. *Back filling*.—The back filling must be brought up evenly on both sides of the sewer with the best material from the excavation, so that no unbalanced pressure shall be brought upon the masonry. It shall be spread in horizontal layers not exceeding 6 inches in depth before ramming, and thoroughly rammed to the top of the trench. No less than two men shall be employed in ramming for each shoveler engaged in replacing the back filling, which shall be compacted with iron-shod rammers, each weighing not less than 12 pounds. When the back filling is deposited by means of wheelbarrows, carts, or wagons, or by machinery, the ramming shall be done as directed by the engineer.

All slides or caving of sides of the trenches or cuts shall be taken out and back filled by the contractor.

As the trench is refilled, the bracing, etc., shall be removed in such manner as to prevent the caving of the sides of the trench. If sheeting is used, so much of it as extends below the crown of the arch of the basin must be withdrawn, unless otherwise directed by the engineer, after refilling over the haunches, but before more than 6 inches of earth is placed on the crown of arch, and before the center is struck.

As the sheet planks are withdrawn the vacancies left by each shall be carefully refilled by ramming with tools especially adapted for the purpose, by watering or otherwise, as may be directed.

13. *Materials*.—The contractor will be furnished at the District property yards with all the necessary sewer pipes, manhole steps, and cast-iron manhole tops with covers, the value of which material, actually used in the work, will not be charged against him. He will also be furnished at the District yards with all the cement, invert blocks and vitrified bricks required for the work, the value of which will be charged against him at the following rates: Portland cement, \$1.50 per barrel; invert blocks, \$0.50 per linear foot; vitrified bricks, \$18 per 1,000.

Where cement is furnished in bags, the bags will be returned by the contractor or charged against him at the rate of \$0.11 each.

The contractor shall convey materials from the points where they are delivered by the commissioners, and store the same in the vicinity of the works. He shall be responsible for the loss incurred, or damage done, to said materials from the time of their delivery until the work is accepted. No materials shall be applied to other use than that for which they are issued.

The materials from the trenches and those used in constructing the sewer appurtenances shall be so deposited as not to hinder nor endanger public travel, and so that free access may be had at all times to all fire plugs, water gates, manholes, and catch basins in the vicinity of the work.

14. *Concrete masonry*.—Concrete masonry will be classified as follows:  
Concrete masonry A will be composed of—1 barrel Portland cement (net weight 380 pounds), 8 cubic feet sand, 8 cubic feet pebbles, 8 cubic feet broken stone; water as directed by the engineer.

Concrete masonry B will be composed of—1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 10 cubic feet pebbles, 10 cubic feet broken stone; water as directed by the engineer.

Concrete masonry C will be composed of—1 barrel Portland cement (net weight 380 pounds), 12 cubic feet sand, 12 cubic feet pebbles, 12 cubic feet broken stone; water as directed by the engineer.

Concrete masonry D will be composed of—1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 20 cubic feet pebbles; water as directed by the engineer.

Suitable appliances, satisfactory to the engineer, for measuring the ingredients for each batch of concrete, shall be kept on the line of the work.

15. *Mixing concrete.*—The thorough mixing and incorporation of all materials will be required. If done by hand labor, the dry cement and sand shall be mixed and turned over by skilled workmen, with shovels, not less than six times before the water is added; the pebbles and broken stone, after being wetted, shall be added to the mixed cement, sand, and water. The whole mass shall then be thoroughly turned over by skilled workmen, with shovels, not less than four times, until every particle of stone is completely enveloped with mortar.

The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men.

No concrete which has once set shall be used as metal for mixing a new batch.

16. *Placing concrete.*—The concrete shall not be thrown or dumped from a height but must be lowered in a vessel and so carefully deposited as to retain the constituents evenly incorporated, as mixed, entirely free from foreign matter of any kind.

In lowering material into the trenches care should be taken not to throw dirt upon freshly laid concrete or other masonry in place. At all stages and for all classes of work concrete and mortar must be kept as free as possible from dirt of every kind, and if unavoidably mixed with dirt, shall be removed and replaced to the satisfaction of the engineer.

No concrete or other work shall be laid in water, and no water shall be thrown upon or allowed to flow over or rise upon masonry until the mortar has had ample time to become set.

Each batch of concrete shall be spread in place in horizontal layers not exceeding 5 inches in thickness before ramming, and shall be at once thoroughly compacted by ramming.

When a layer of concrete has become set, it will be carefully cleaned of all dirt or loose fragments, and a thin layer of mortar spread thereon before depositing the fresh concrete.

Concrete shall not be used after it has begun to show evidences of setting.

17. *Molds, etc.*—Strong molds, forms and centers, satisfactory to the engineer, made to fit the curves and shapes of all work done under this contract shall be provided by the contractor for each stage and section of the work, and when they lose their proper dimensions or shape, they shall be replaced by others. Planking, forming the faces of all exposed walls, shall be so matched and placed as to give an even and uniform surface to the concrete. Before being used, the molds shall be scraped clean of cement and dirt. Their setting up, striking and general management shall conform to directions given by the engineer. For concrete inverts, where brick lining is omitted, sheet steel collapsible forms must be used. All work must be specially smooth and well filled, and no plastering will be allowed.

When, in the opinion of the engineer, it is necessary to protect the masonry from injury, the sewer shall be braced inside, without any additional charge. The bracing shall be done in a manner satisfactory to the engineer and it shall be left in place until he shall direct its removal.

18. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

19. *Sand.*—Sand for concrete and sand for mortar shall be clean, sharp sand, containing both fine and coarse grains, free from mud, sewage, mica, or other foreign matter, and at least equal in desirable qualities to the samples in the property office, District of Columbia, marked "Sample of sand for paving and concrete," and "Sample of sand for brickwork and plastering," respectively.

20. *Pebbles.*—Pebbles shall be from fine bank or river gravel, thoroughly screened, free from earthy or other foreign matter, and small enough to pass through a ring  $1\frac{1}{2}$  inches in diameter, and shall not contain more than 5 per cent of material which shall pass through a No. 10 sieve.

21. *Broken stone.*—Broken stone for concrete masonry must be hard and of durable character, the run of the crusher, and it shall not contain more than 1 per cent of materials passing a No. 10 sieve. It shall be thoroughly cleansed from all foreign substances, and if so ordered by the engineer, it shall be screened and washed. Detritus, or any material other than hard, angular fragments of stone, shall be considered a foreign substance. Every piece of stone for concrete masonry must be small enough in largest dimension to pass through a ring 2 inches in diameter.

22. *Mortar.*—Mortar used in this work shall be composed of Portland cement in perfect condition and loose, dry sand in the proportion of 1 barrel of cement (net weight 380 pounds), and 9 cubic feet of mortar sand, thoroughly mixed dry, and a sufficient quantity of water afterwards added to make a rather stiff paste. It shall be used within an hour after the addition of the water, but no mortar shall be used after having become hard or set.

23. *Mixing mortar.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned

over and mixed with shovels by skilled workmen not less than six times before the water is added.

24. *Platforms.*—Platforms shall be provided upon which all sand, pebbles, and broken stone shall be placed when brought upon the line of the work, and there kept until used.

25. *Mortar boxes.*—Tight mortar boxes shall be provided by the contractor, and no mortar shall be made otherwise than in such boxes, except for concrete. No deposits of sand or mixing of mortar will be permitted upon pavements.

26. *Invert blocks.*—Invert blocks shall be laid true to line and grade. A concrete bed of the required shape and dimensions shall first be prepared, and a layer of mortar one-half inch thick spread upon this bed. Upon this coat of mortar the blocks shall be laid, and each block shall be carefully pressed down and bedded upon the mortar, so as to insure a close contact throughout the bottom and back of surface of the blocks. The joints between consecutive blocks shall be full mortar joints and as close as practicable.

27. *Vitrified blocks.*—Each course of vitrified invert bricks shall be laid in full mortar joints truly on line, and the joints upon the face of the work shall not exceed three-sixteenths inch in thickness.

28. *Bricks.*—Bricks used shall be of the best quality of whole new bricks, of uniform size, compact texture, burned hard and entirely through, with true surface, free from injurious cracks and flaws, tough and strong, and having a clear ring when struck together. They must have a crushing strength of not less than 4,500 pounds per square inch, and must not absorb more than 10 per cent of their weight of water, after having been thoroughly dried and then immersed for 24 hours in water. Samples will be subject to such tests as may be satisfactory to the engineer.

The bricks used upon the work must at least equal in quality the sample bricks in the property office, District of Columbia.

The truest and smoothest bricks will be used in the face of the masonry. All bricks delivered for use shall be culled by the contractor when required. No bricks rejected in the culling shall be used in any work done under this contract.

29. *Brickwork.*—Bricks must be thoroughly wet by immersion immediately before laying. Every course shall be laid with a line. Every brick must be thoroughly laid in full mortar joints on bottom, side, and end, which, for each brick must be formed by one operation. In no case is the joint to be made by grouting, or by working in mortar after laying the brick. No joint shall exceed three-eighths inch in thickness. All joints on faces shall be trowel struck.

Brick masonry below the springing line in brick sewers must be well and firmly bedded upon the foundation prepared for it or upon the wall of the adjacent excavation, as the case may be; and all spaces which would otherwise exist between the outer lines of the sewer and the walls of the foundation or excavation must be filled with hydraulic cement mortar, concrete, or brick masonry, as may be directed.

All unfinished brick masonry must be "racked back" or toothed, as may be directed, and when new work is joined to the unfinished portion, the latter must be thoroughly cleaned.

Brick masonry of sides and arches shall be bonded and keyed as directed, especial care being exercised with each ring against laying too large joints at the back. All joints shall be normal to the section of the sewer and all "lipping" of brick must be carefully avoided.

30. *Arches.*—Concrete arches shall be allowed to set at least 24 hours before any back filling or other weight shall be put upon them, and no walking or working thereon shall be allowed during said time.

31. *Steel reinforcement.*—Steel reinforcement, where required, will be furnished by the District of Columbia and the contractor will be required to handle and place same as directed, for which he will be given an extra order as provided for in paragraph No. 12 of the General Stipulations.

32. *Plastering.*—As soon as practicable after the "keying up" is completed the back of every arch of brick or concrete shall be thoroughly cleaned of dirt and loose or projecting mortar, and shall then be smoothly plastered, from the springing line to the crown, with a coat of mortar three-eighths inch thick; the work to be done by skilled workmen, using tools satisfactory to the engineer. This coat shall be allowed to become fully set before any back filling is placed or walking allowed upon it.

33. *Sewer pipe.*—Sewer pipe will be of the ring or plain cylindrical pattern.

34. *Laying sewer pipe.*—Laying pipe sewer shall be executed in the following manner: The trench shall first be excavated by the use of the prescribed form to the required depth, shape, and dimensions; concrete shall then be compactly rammed in the bottom to the required depth, and its upper surface brought to a plane lower than the grade of the sewer by thickness of the wall of the pipe. The pipe must be



perfectly supported throughout its entire length upon its concrete bed; bringing the pipe to grade by means of stone, pieces of band, etc., will not be permitted. Concrete shall then be rammed upon the sides and haunches of the pipe to the full specified width and thickness, care being taken that no void spaces exist. The greatest care must be exercised that the alignment and grade of the pipes be not disturbed. The joints between the pipes shall be closed by pointing with stiff mortar, after which a layer of concrete shall be carried over them to a thickness of not less than 4 inches at any point, and having top and bottom widths of not less than 12 inches and 14 inches respectively. During the suspension of the work at night or at other times a suitable stopper shall be placed in the last pipe laid to prevent earth from washing in. No sand, mud, mortar, concrete, or other material shall be allowed on the inside of pipe sewers. Upon completion they must be left straight, clean, smooth, and in every other respect acceptable. Mortar and concrete shall be allowed to set before any back-filling is placed or walking is allowed upon the sewer, and the greatest care must be taken not to disturb the pipes, haunching, and banding.

35. *Manholes.*—Brick manholes of the form shown on the drawing shall be constructed in the sewers wherever ordered by the engineer.

In sewers of greater span than 3 feet, the manholes shall spring from one side of the arch; in sewers having a span of 3 feet or less, the axis of the manholes shall be directly over the center of the sewer.

Connection for public and house sewers and catch-basins shall be built into the manholes wherever required.

Each manhole shall have steps of wrought iron, built into brickwork, as shown on the drawings. Similar steps shall be built into the inverts of the sewers at the manholes as the brickwork progresses, as may be directed.

The contractor shall carefully and securely fit each manhole with a cast-iron frame and cover, as shown on the drawings.

36. *Water-tight work.*—Water-tight work is required in all construction.

37. *Connections.*—Connections with existing sewers shall be made by the contractor according to directions given by the engineer. The right to permit the connection of any public or house sewer with a sewer under construction before completion of the latter is expressly reserved to the commissioners.

38. *Replacing.*—When necessary to pump sewage in replacing and laying relief sewers, the material pumped shall be carried by means of hose or other water-tight conveyor to the sewer or manhole designated by the engineer, and it shall not be allowed to flow into or over the surface.

39. *Piling.*—Piles are to be not less than 8 inches in diameter at the small end, of live timber, sound, straight and free from rot, large knots, wind shakes and all other defects. They may be of pine, spruce, white oak, or such other durable timber as the engineer may approve. They are to be well and carefully driven with small end down, plumb and true to position, by a heavy hammer, delivering blows in rapid succession, to a penetration under the last blow of one-half inch for a hammer weighing 2,000 pounds, falling 12 feet.

Each pile shall be stripped of bark, have all knots pared smooth, and shall have the lower end squared or pointed before the driving, as may be directed.

After driving, the pile shall be cut off so as to form a true and even bearing for the cap timber, which shall be fastened to each pile by a 2-inch treenail of white oak, Georgia or Florida pine, or hickory, or a 1-inch drift bolt driven through the cap and 10 inches into the head of the pile. Any pile split or otherwise injured in driving, or driven out of position will be replaced by a sound one in true position. The top of any pile shall not be drawn over more than 9 inches after driving to allow capping. Any pile which is driven a greater distance from its true position than 9 inches, or whose penetration exceeds one-half inch under the last blow, will be rejected, and must be replaced by a pile driven adjacent thereto as directed by the engineer. While being driven, should a pile head become broomed or otherwise injured so as to prevent effective driving, the top shall be sawed off as directed. When necessary, in the judgment of the engineer, each pile shall be bound, while driving, with a strong iron band, of a proper size to protect pile head. In all cases the pile must refuse for the penetration specified, with the top sufficiently above subgrade to permit cutting off all that portion of the piles split or otherwise injured in any way by the process of driving, when the pile is sawed off at subgrade. In no case will the use of a "follower" be permitted. The piles must be carefully sawed off by a horizontal cut at the required grade line. For piles rejected for any cause whatever no allowance will be made.

40. *Lumber.*—All lumber for use in the completed structure must be sound, straight-grained, and free from sap, loose or rotten knots, wind shakes, or any other defect which would tend to impair its strength or durability; must be straight, of the dimensions given with square edges, and uniform width and thickness throughout each



piece. Each floor plank must be secured to each cap timber upon which it rests by two 6-inch spikes. All framing must be done in a thorough, workmanlike manner, and both material and workmanship will be subject to the inspection and approval of the engineer.

41. *Foremen.*—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer.

All foremen, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

42. *Inspection.*—The contractor shall, when requested, provide the engineer with such ladders, lanterns, tools, and labor, samples, and other facilities as may be necessary for inspecting materials and work.

Imperfect materials or work which may be discovered shall be replaced or corrected immediately on the requirement of the engineer, notwithstanding that it may have been overlooked by the proper inspector, and included in a partial payment. Materials condemned or rejected by the engineer may be branded or otherwise marked, and shall on his demand be at once removed to a satisfactory distance from the work. Any omission to disapprove the work at the time of inspection, or at the time of any monthly or other estimate, shall not relieve the contractor of any of his obligations, and all work of whatever kind which during its progress and before it is finally accepted may become damaged or prove unacceptable for any cause, shall be removed by the contractor and replaced by good and satisfactory work. If not removed within 24 hours after written notice from the engineer, it shall be removed by that officer and the cost charged to the contractor and deducted from any amount due or which may become due him.

## FORMS ACCOMPANYING ALL SPECIFICATIONS.

### GENERAL STIPULATIONS.

These stipulations are a part of the specifications.

1. *Bond.*—Good and sufficient bond in the penal sum equal to at least 25 per cent of the estimated amount of the contract, with sureties or a surety company satisfactory to the commissioners, will be required from all contractors, guaranteeing that their contract will be faithfully performed; that the contractor or contractors will be responsible for all claims for damages to persons, property, or premises arising out of his or their operations prior to the acceptance of the finished work, and that he or they will promptly make payments to all persons supplying him or them with labor and materials in the prosecution of the work provided for in the contract. In the event that the sureties or surety company become unsatisfactory to the said commissioners they may in their discretion require from the contractor an additional or new bond in the same or lesser penal sum, with sureties or a surety company satisfactory to them, and to be conditioned as above required. Upon the failure to furnish such additional or new bond within 30 days after written notice so to do, all payments under this contract will be withheld until such additional or new bond is furnished.

2. *Transfers.*—No contract or any interest therein shall be transferred by the parties to whom the award is made; such transfers will be null and void, and will cause the contract to be annulled and the work to be given to other parties under the conditions mentioned herein.

3. *Patents.*—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

4. *Contractor's risk.*—All loss or damage due to negligence or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same, or from the action of the elements, will be sustained by the contractor.

5. *Employees.*—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer. He shall so conduct his operations as to interfere with the work of other District contractors as little as possible. The foremen, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

An employee or agent of the contractor who shall use profane or abusive language to the inspector, or otherwise impede or embarrass him in the performance of his duty, or who, in the opinion of the engineer, is careless or incompetent, or obstructs the progress of the work, or disobeys or evades the instructions given by the engineer, shall be immediately discharged and not again employed without the consent of the engineer.

6. *Weather.*—The contractor shall suspend all work under the contract when notified by the engineer that the weather is unsuitable for carrying it on.

If work is allowed during cold or freezing weather, the contractor shall take such additional precautions as the engineer shall require, without additional expense, and under no circumstances shall materials be used which have been injured by the weather.

7. *Inspection.*—Inspectors may be appointed who shall have access to all parts of the work at all times and whose duty it shall be to point out to the contractors any neglect or disregard of the specifications of contract; but the right of final rejection of the work will not be waived at any time. Upon all technical questions concerning the execution of the work, in accordance with the specifications and measurements thereof, the decision of the engineer shall be final. Ordinarily one inspector will be employed by the District of Columbia for each section of the work under contract; but if, on account of any apparent disregard of the specifications, additional inspectors shall be required, they will be employed by the District of Columbia, at the rate not to exceed \$6 per diem each, and the cost of same will be charged to the contractor.

8. *Condemned work.*—All materials furnished and work done not in accordance with these specifications shall be removed within 24 hours after written notice from the engineer by and at the expense of the contractor, or in case of failure to do so, it shall be removed by the District of Columbia and the cost thereof charged to the contractor and deducted from the amount due or which may become due him. None but the best material of the several descriptions shall be used.

9. *District material.*—No materials furnished by the District shall be applied to any other use, public or private, than that for which they are issued to the contractor. The contractor will be held responsible for all materials delivered to him upon requisition, and shall be charged for all materials delivered upon said requisition. Should the amount of materials actually delivered and not properly accounted for exceed the amount used upon the work, the cost to the District of the difference must be made good by the contractor, and will be deducted from any moneys which may be due him.

Any material that is property of the District that is not accounted for by the contractor to the satisfaction of the engineer, will be charged against the contractor at the contract price for similar material.

10. *Failure.*—If the contractor shall delay or fail to commence with the delivery of the material or the performance of the work as specified herein, or shall, in the judgment of the Commissioners of the District of Columbia, fail to prosecute faithfully and diligently the work in accordance with the specifications and requirements of this contract, then, in either case, the said commissioners shall have the power to annul this contract by giving notice in writing to that effect to the contractor, and upon the giving of such notice all payments to the contractor under this contract shall cease, and all money or reserved percentage due or to become due thereunder, shall be retained by the said commissioners until the final completion and acceptance of the work herein stipulated to be done; and the said commissioners shall have the right to recover from the contractor whatever sums may be expended by the District of Columbia in completing the said contract in excess of the price herein stipulated to be paid the contractor for completing the same, and also all cost of inspection and superintendence, including all necessary traveling expenses connected therewith, incurred by the said District of Columbia in excess of those payable by the said District of Columbia during the period herein allowed for the completion of the contract by the contractor, and the said commissioners may deduct all the above-mentioned sums out of or from the money or reserved percentage retained as aforesaid; and upon the giving of the said notice the said commissioners shall be authorized to proceed to secure the performance of the work or delivery of the materials, by contract or otherwise, in accordance with law.

11. *Payment.*—Payments will be made monthly, provided the progress of the work is satisfactory, less 10 per cent of each estimate, to be withheld until final payment, but 10 per cent of the cost of the work will be retained and invested as hereinbefore provided.

12. *Conveniences.*—The contractor shall provide, for use of the District inspectors stationed at paving plant, suitable office and testing room with such plain furniture as may be necessary for the proper transaction of their business as agents for the District. They shall also furnish, when needed for use of laborers on line of work, necessary toilet conveniences secluded from public observation.

13. *Cleaning up.*—On the completion of work it shall be thoroughly cleaned before it will be accepted.

14. *Lines.*—All necessary lines and levels will be given by the engineer by means of suitable marks, and in establishing them the contractor shall provide such materials and assistance as may be required by the engineer. All marks given are to be carefully preserved and if destroyed through carelessness the cost of replacing them shall be charged against the contractor at a fixed price of \$2 for each point, to be deducted from any money found due at final settlement.

15. All loss or damage due to negligence or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same or from the action of the elements, will be sustained by the contractors.

16. *Interpretation.*—Any doubt as to the meaning of these specifications will be explained by the engineer, who shall have the right to correct any errors or omissions in them when such correction is necessary for the proper fulfillment of their intention. Whenever the word "commissioners" is used in these specifications, it is understood to designate the Commissioners of the District of Columbia. Whenever the word "engineer" is used, it is understood to designate the engineer commissioner of the District of Columbia, or, in his absence, his duly appointed assistants, assistant engineers, and inspectors representing him, limited by the special duties intrusted to them.

#### INSTRUCTIONS TO BIDDERS.

1. *Signature.*—Proposals must be signed by the bidder with the signature in full. When a firm is a bidder, the agent who signs the firm name to the proposal shall state, in addition, the names of the individuals composing the firm. When a corporation is a bidder, the person signing shall state under the laws of what State the corporation was chartered, and the name and title of the officer having authority under the by-laws to sign contracts. The proposal shall also bear the seal of the corporation attested by its secretary. Anyone signing the proposal as agent must file with it legal evidence of his authority so to do.

2. *Address.*—Post-office address, county, and State must be given after the signature.

3. *Prices.*—All prices must be written in words as well as expressed in figures. In case of variation the written prices shall govern.

4. *Identification of proposal.*—Proposals will be placed in a sealed envelope, so marked as to indicate its contents without being opened. This envelope will be placed in another addressed to the Commissioners of the District of Columbia, Washington, D. C.; if forwarded otherwise than by mail it must be delivered to the secretary to the Board of Commissioners.

5. *Rejection of bids.*—Reasonable grounds for supposing that any bidder is interested in more than one proposal for the same item will cause the rejection of all proposals in which he is interested. The commissioners reserve the right to waive any informality in the proposals received, and to reject any and all proposals, or parts of a proposal, and to make the award in such manner as they consider best for the interests of the District of Columbia. Proposals received after the time advertised for opening bids will be returned unopened. No proposal will be accepted from any failing bidder or contractor known as such on the records of the District of Columbia, for 20 years prior to the date of bid.

6. *Experience.*—Bidders must present satisfactory evidence that they have been regularly engaged in the business of constructing such work as they propose to execute, and in case the lowest responsible bidder has never done any work for the District of Columbia, he must, prior to the award of contract, be able to show work done by him within a distance of 1,000 miles from the District of Columbia, and may be required to pay the necessary expenses of an inspection of such work by such representatives of the District of Columbia, not exceeding two in number, as may be sent by the engineer to examine it.

7. *Capital and plant.*—Bidders must present satisfactory evidence that they are fully prepared with the necessary capital, materials, and machinery to conduct the work to be contracted for to the satisfaction of the commissioners, and to begin it promptly when ordered.

8. *Guaranty deposit.*—Bidders will inclose a receipt of the collector of taxes for the District of Columbia for the amount named in the form of proposal as a guarantee of good faith, and as reasonable fixed and liquidated damages, and not as a penalty, to the District of Columbia, and which they agree to forfeit in the event of their failure to enter into contract, with good and sufficient sureties, within 10 days after notification of acceptance of their proposal.

9. *Return of deposits.*—Bidders' deposits will be returned on application to the chief clerk, engineer department, to unsuccessful bidders after award of contract is made and to successful bidders after execution of contract.

10. *Sundays or legal holidays.*—No work shall be done on Sundays or legal holidays, except in cases of emergency, and then only with the consent of the engineer; nor shall any work be done at night unless authorized in writing by the engineer.

11. *Changes.*—Changes, alterations, or interlineations must be explained by footnote in proposal.

12. *Withdrawals.*—If a bidder wishes to withdraw his proposal he may do so before the time fixed for the opening, without prejudice to himself, by communicating his

purpose in writing to the secretary to the board of Commissioners, and, when reached it shall be handed to him or to his authorized agent, unread.

13. *Breach*.—No waiver of any breach of the contract shall constitute a waiver of any subsequent breach of any part thereof, nor of the contract.

14. *Laws affecting public work*.—The attention of bidders is invited to the "Act regulating retent on contracts with the District of Columbia, approved March 31, 1906:"

"That on all contracts made by the District of Columbia for construction work there shall be held a retent of ten per centum of the cost of such construction work as a guaranty fund to keep the work done under such contracts in repair, and that the terms of such contracts shall be strictly and faithfully performed. On contracts for the construction of asphalt, tar, brick, cement, or stone pavements the retent shall be held for a term of five years from the date of the completion of the contract. On contracts for the construction of bridges and sewers the retent shall be held for a term of one year from the date of completion of contract. On contracts for the construction of buildings and other contracts for construction work, the retent shall be held until the completion of the work. All retents for one year or more shall be deposited with the Treasurer of the United States as now required by law."

Also the following clause of the act of March 3, 1887:

"That the Treasurer of the United States, as commissioner of the sinking fund of the District of Columbia, shall not be compelled hereafter to invest money retained from District contracts hereafter entered into; but may, in his discretion retain said funds without interest, or invest the same in any class of United States or District of Columbia bonds, at the request and at the risk of the contractor, whenever the sum retained on any contract shall reach the sum of one hundred dollars or more; any sum less than one hundred dollars shall be retained without interest as above."

Also to public act No. 82, approved February 28, 1899, relative to payment of claims for material and labor furnished for District of Columbia buildings, and to the public act relative to the limitation of the hours of daily service of laborers and mechanics upon the public works of the United States and the District of Columbia.

All laws and regulations of the United States and of the District of Columbia, especially in so far as they relate to the protection of life and property, are to be strictly observed.

15. *Eight-hour law*.—The following provision made in accordance with public act of Congress No. 199, approved June 19, 1912, is made a part of this contract.

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the contractor or any subcontractor contracting for any part of the work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work under a penalty for each violation of this provision of \$5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work.

It shall be the duty of the inspector or inspectors or other employees of the District of Columbia, upon observation or investigation forthwith to make report to the Commissioners of the District of Columbia of all violations of the provisions of this paragraph and of said act together with the name of each laborer or mechanic who has been required or permitted to labor in violation of the provisions hereof, the day or days of such violation, and the amount of penalties accruing under the provisions hereof by reason of such violation. This sum shall be withheld for the use and benefit of the District of Columbia by the auditor of the District of Columbia out of any money due the contractor, whether the violation is by the contractor or any subcontractor. Any contractor or subcontractor aggrieved by the withholding of any penalty as herein-before provided shall have the right within six months thereafter to appeal to the Commissioners of the District of Columbia, who shall have the power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty herein-before provided such contractor or subcontractor may within six months after the decision of said commissioners file a claim in the Court of Claims, which shall have jurisdiction to hear and decide the matter in like manner as in other cases before said court.

Nothing in this provision shall be construed to repeal or modify the act of Congress relating to the limitation of the hours of daily service of labor and mechanics employed upon the public works of the United States or the District of Columbia, approved August 1, 1892, as modified by acts of Congress approved February 27, 1906, and June 30, 1906, and March 3, 1913.

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